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Ethnomedicine of the Patamona Indians of Guyana

by

Surojnauth Tiwari

Volume I

**A dissertation submitted to
the Graduate Faculty in Biology
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy,
The City University of New York**

2000

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This manuscript has been read and accepted for the Graduate Faculty in Biology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

ETHNOMEDICINE OF THE PATAMONA INDIANS OF GUYANA

by

Surojnauth Tiwari

Advisor: Professor Dominick V. Basile

An ethnobotanical survey of the Patamona Indians was carried out, and the results compared to the flora of the west-central region of Guyana which they inhabit. The region's flora consists of 158 families, 786 genera, and 1803 species, excluding the Bryophytes. The medicinal flora consists of 84 families, representing 53.16% of the flora families, 226 genera, representing 28.75% of the flora genera, and 339 species representing 18.80% of the species in the region. These plants are used to treat 143 diseases. A series of graphs are provided to show the relationship between the flora and the medicinal flora. Fifty eight species are used to treat diarrhea; 31 species are used to treat itching skin; 25 species are used to treat dysentery; 20 species are used to treat malarial infections; 19 species are used to treat asthma; 19 species are used to treat pain; 13 species are used to treat skin conditions; 9 species are anti-arthritic; and 2 species are used as abortifacients.

Linear regression analysis provides predicted and residual values of the taxa used for treating each disorder. Positive residuals and P-values are used to indicate taxa most

likely to be used as treatment for a particular disorder.

Issues of conservation related to the Patamona livelihood are examined. Finally, strategies to conserve plant and animal biodiversity on Patamona lands are suggested.

Dedicated to Dr. Ariel Mengarini M.D.

Acknowledgements

This thesis was made possible by the help from several people, and I would like to express my gratitude to them here. First, I would like to thank Professor Dominick Basile for encouraging students to embark upon ethnobotanical studies, and for allowing me to realize my long-held ambition of carrying out the ethnobotanical study of a Guyanaese Amerindian group. I hope that because of Dr. Basile's work in useful plants and his openness to student participation, other Lehman students will be able to join this important but relatively new field. Professor Dwight Kincaid was always there to guide the statistical component of this research, and made many contributions. I also thank the another member of my committee, Professor Thomas Jensen, for his support and encouragement. Dr. Robert DeFilipps of the Smithsonian Institution, kindly agreed to come down from Washington, D.C. for committee meetings, and was the man who first introduced me to ethnobotany when I was an intern at the Smithsonian, many years ago.

I would like to thank Barbara Muerer-Grimes, who helped me with chemical research on Patamona plants, research that did not find its way into this thesis, but that I hope will someday be useful to medicine. Dr. Hans Beck, of the New York Botanical Garden, freely gave encouragement, guidance, and helpful suggestions, and arranged some of my funding, without which this research would have been severely hampered.

Professors Jack Valdovinos, Eleanor Wurtzel, Joseph Rachlin and Dr. Margaret Basile always encouraged me, and I thank them here. Many thanks to Dr. Ariel

Mengarini, M.D., for his enthusiasm, support, and advice as to the medical aspects of this study.

I thank Dr. Tony Pappantoniou, Dr. Barbara Warkentine, Mr. Mike Baxter, Mr. Steve Trimboli, Mr. David Cain and the rest of faculty and staff of the Biology Department. A special thank you to Ms. Dolores Vitanza, secretary of the Biology Department, for her help. I also acknowledge the assistance of the other graduate students in the department and am deeply appreciative.

I thank the staff of Lehman College library for their assistance and support in my quest for journals and other articles.

I would also like to thank the following curators from the New York Botanical Garden their help of various kinds, such as plant identification. Dr. Brian Boom, Dr. Douglas Daly, Dr. Scott Mori, Mr. John Mitchell, Dr. Michael Nee, Dr. Rupert Barneby, Dr. Andrew Henderson, Dr. Michael Balick, Dr. Noel Holmgren, Dr. Patricia Holmgren, Dr. Jacquelyn Kallunki, and all other members of the managing staff of the New York Botanical Garden Herbarium and Library. I also thank Jan Stevenson and other staff members of the Institute of Economic Botany of the NYBG.

Thanks to Dr. Vicki Funk, Dr. John Wurdack, Dr. Larry Skog, Dr. David Lellinger, Mark Strong, Carol Kelloff, John Pruski and the staff of the Smithsonian Institution, Botany Department who provided me with the checklist of Bruce Hoffman's, and Tim McDowell's collections in Region 8 of Guyana. Thanks also to Dr.

Amy Rossman of the USDA, National Fungal Collection, and to the Montgomery Foundation for supporting my palm collecting, and to Dr. Robert Boris of Merck Pharmaceuticals, Incorporated, for the database search among other things.

Thanks are also extended to Mr. Mike Tamessar of the Museum at the University of Guyana, and Janet Forte of the Amerindian Research Unit of University of Guyana.

Finally, a special thank you to Athena Mengharini and to the Patamona people of Kamana, Kato, Kopinang and Waipa whose assistance and acceptance helped to make this thesis possible. In this regard, I thank Alban Williams, Dominique Williams, Caesario Williams, Mrs. Loudina Williams, Roxanne Williams, Sylvanos Peters, Rufus Joseph, John Skybar, Rueben Birchman, Fabian Birchman, Beverley Joseph, Mrs Adelina Joseph, Stanley Peters (Health Officer, Kamana), Francis Xavier, C. Xavier, M. Xavier, Alan Benjamin, A. Albert, J. Andrew, M, Samuels, J. Edward, J. Fredricks, E. Pablo, M. Pablo, K. Daniel, S. Fredricks, M. Edward, J. Atkinson, N. Atkinson, C. Atkinson, E. Atkinson, G. Andrew, M. Smith, Alan Edwin, Mr. Samuels (YaKu) Gerald Rodriguez, Harold Thomas, Joseph Rodriguez, Johnny Peters, Michael Abraham, Felicity Fredricks, Evelyn Noel (Health Officer), Lynette Rodriguez, Debra Seepio, Elsie Pio, John Pio, Josephine, Frank Gomez, Adena, Ivan Williams, Ronald Abraham, Geroage Baldenvick, Mrs. Joseph Rodriguez, Nemiah McIntosh, Adrian Abraham, Clements Abraham, Felix Clements, Marlon McIntosh, Janet Batista, Marlooon Seepio, Reaud Seepio, Angeeta Williams, Egbert Gomez, Lorraine Gomez, Margaret Gomez and Mrs. Smith.

Table of Contents

VOLUME I

Copyright page	ii
Approval page	iii
Abstract	iv
Dedication page	vi
Acknowledgements	vii
Table of contents	x
List of Tables	xii
List of Figures	xxiii
Map of study sites	xxix
Chapter 1: Introduction, Literature review and methods	1
Chapter 2: Medicinal plants of Kamana	24
Chapter 3: Medicinal plants of Kato	109
Chapter 4: Medicinal plants of Kopinang	206
Chapter 5: Medicinal plants of Waipa	258

VOLUME II

Chapter 6: Analysis of Patamona medicinal plants	358
Chapter 7: Comparative ethnobotany of four 250 m² forest plots	418

Chapter 8: Conservation issues that may impact Patamona Indians and	
Recommendations.	430
Appendix 1: Nunber, percent and regression analysis of Patamona	
medicinal plants	447
Appendix 2: Forest plots at study sites	518
Appendix 3: Percent and line of best fit of Patamona	
medicinal plants	528
Appendix 4:Summary of the Flora of the Potaro-Siparuni Region	
and medicinal Flora of the study site	567
Appendix 5: Medicinal use categories and number of species used to	
treat each category at Kamana	575
Appendix 6: Medicinal use categories and number of species used to	
treat each category at Kato	579
Appendix 7: Medicinal use categories and number of species used to	
treat each category at Kopinang	583
Appendix 8: Medicinal use categories and number of species used to	
treat each category at Waipa	586
Appendix 9: Wildlife of Region 8	590
Glossary	596
Bibliography	598

List of Tables

Table 1: Number and percent species used as abortifacient plants.	447
Table 2: Number and percent taxa in families used to treat abscesses.	447
Table 3: Number and percent taxa in families used as analgesic plants.	448
Table 4: Regression analysis and Parameter Estimates of analgesic plants.	448
Table 5: Predicted and residual number of species used as analgesic plants.	449
Table 6: Number and percent taxa in families used as anti-arthritic plants.	450
Table 7: Predicted and residual number of species used as anti-arthritic plants.	450
Table 8: Number and percent taxa in families used as antibacterial plants.	451
Table 9: Regression analysis and Parameter estimates of antibacterial plants.	451
Table 10: Predicted and residual number of species used as antibacterial plants.	452
Table 11: Number and percent taxa in families used as anti-diabetic plants.	452
Table 12: Number and percent species used as anti-diarrheal plants.	453
Table 13: Predicted and residual number of species used as anti-diarrheal plants.	454
Table 14: Number and percent taxa in families used as anti-dysenteric plants.	455
Table 15: Predicted and residual number of species used for treating dysentery.	455
Table 16: Number and percent taxa in families used anti-helminthic plants.	456
Table 17: Number and percent taxa in families used as anti-herpetic plants.	456
Table 18: Predicted and residual number of species used as anti-herpetic plants.	456
Table 19: Number and percent taxa used as antihistamine plants.	457

Table 20: Number and percent taxa in families used as anti-infective plants.	457
Table 21: Regression analysis and Parameter estimates of anti-infective plants.	458
Table 22: Predicted and residual number of species used as anti-infective plants.	458
Table 23: Number and percent taxa in families used as anti-inflammatory plants.	459
Table 24: Predicted and residual number of species used to treat inflammation.	459
Table 25: Number and percent taxa in families used as anti-irritant plants.	460
Table 26: Regression analysis and Parameter estimates of anti-irritant plants.	460
Table 27: Predicted and residual number of species used as anti-irritant plants.	460
Table 28: Number and percent taxa in families used as anti-menorrhagic plants.	460
Table 29: Regression analysis and Parameter estimates of anti-menorrhagic plants.	461
Table 30: Predicted and residual number of species as anti-menorrhagic plants.	461
Table 31: Number and percent taxa in families used as anti-microbial plants.	461
Table 32: Number and percent taxa in families used as anti-pruritic plants.	462
Table 33: Predicted and residual number of species used to treat itching.	463
Table 34: Number and percent taxa in families used as anti-pyretic plants.	464
Table 35: Predicted and residual number of species used as anti-pyretics.	465
Table 36: Number and percent taxa in families used as antiseptic plants.	466
Table 37: Regression analysis and Parameter estimates of antiseptic plants.	466
Table 38: Predicted and residual number of species used as antiseptic plants.	467

Table 39: Number and percent taxa in families used to treat asthma.	468
Table 40: Number and percent taxa in families used to treat back pain.	468
Table 41: Regression analysis and Parameter estimates of plants used to treat back pain.	469
Table 42: Predicted and residual number of species used to treat back pain.	469
Table 43: Number and percent taxa in families used to treat biliousness.	469
Table 44: Regression analysis and Parameter estimates of plants used to treat biliousness.	470
Table 45: Predicted and residual number of species used to treat biliousness.	470
Table 46: Number and percent taxa used as blood purifying plants	470
Table 47: Number and percent taxa in families used to treat bronchitis.	470
Table 48: Number and percent taxa in families used to treat "bush yaws".	471
Table 49: Regression analysis and Parameter estimates of plants used to treat "bush yaws".	471
Table 50: Predicted and residual number of species used to treat "bushyaws".	472
Table 51: Number and percent taxa in families used to treat chicken pox.	473
Table 52: Regression analysis and Parameter estimates of plants used to treat chicken pox.	473
Table 53: Predicted and residual number of species used to treat chicken pox.	474
Table 54: Number and percent taxa in families used to treat colds.	475

Table 55: Predicted and residual number of species used to treat colds.	476
Table 56: Number and percent taxa in families used to treat cold sweat.	477
Table 57: Predicted and residual number of species used to treat cold sweat.	477
Table 58: Number and percentage taxa in families used to treat conjunctivitis.	478
Table 59: Regression analysis and Parameter estimates of plants used to treat coughing.	478
Table 60: Predicted and residual number of species used to treat coughing.	479
Table 61: Regression analysis and Parameter estimates of plants used to treat cracked heels.	479
Table 62: Predicted and residual number of species used to treat cracked heels.	480
Table 63: Number and percent taxa in families used to treat superficial cuts and wounds	480
Table 64: Regression analysis and Parameter estimates of plants used to treat superficial cuts and wounds.	480
Table 65: Predicted and residual number of species used to treat superficial cuts and wounds.	481
Table 66: Number and percent taxa in families used to treat dermatitis.	482
Table 67: Regression analysis and Parameter estimates of plants used to treat dermatitis.	482
Table 68: Predicted and residual number of species used to treat dermatitis.	483

Table 69: Number and percent taxa used to treat drooling babies.	483
Table 70: Number and percent taxa in families used to treat eczema.	484
Table 71: Regression analysis and Parameter estimates of plants used to treat eczema.	484
Table 72: Predicted and residual number of species used to treat eczema.	485
Table 73: Number and percent taxa in families used as emetics.	485
Table 74: Predicted and residual number of species used as emetics.	486
Table 75: Number and percent taxa in families used as emollient plants.	486
Table 76: Regression analysis and Parameter estimates of plants used as emollient agents.	487
Table 77: Predicted and residual number of species used as emollient plants.	487
Table 78: Number and percent taxa in families used to treat eye infections.	488
Table 79: Regression analysis and Parameter estimates of plants used to treat eye infections.	488
Table 80: Predicted and residual number of species used to treat eye infections.	489
Table 81: Number and percent taxa in families used as fish poison.	489
Table 82: Predicted and residual number of species used as fish poison plants.	490
Table 83: Number and percent species used as flavouring plants.	490
Table 84: Predicted and residual number of species used as flavouring plants.	490
Table 85: Regression analysis and Parameter estimates of flavouring plants.	491

Table 86: Number and percent taxa in families used to treat fungal infections.	491
Table 87: Predicted and residual number of species used to treat fungal infections.	492
Table 88: Number and percent taxa in families used as hallucinogenic plants.	492
Table 89: Number and percent taxa in families used for herbal baths.	493
Table 90: Regression analysis and Parameter estimates of plants used for herbal baths.	493
Table 91: Predicted and residual number of species used for herbal baths.	494
Table 92: Number and percent taxa in families used to treat hypertension.	495
Table 93: Regression analysis and Parameter estimates of anti-hypertensive plants.	495
Table 94: Predicted and residual number of species used to treat hypertension.	495
Table 95: Number and percent taxa in families used to treat impotence.	496
Table 96: Regression analysis and Parameter estimates of plants used to treat impotence.	496
Table 97: Predicted and residual number of species used to treat impotence.	496
Table 98: Number and percent taxa in families used to treat influenza.	496
Table 99: Regression analysis and Parameter estimates of plants used to treat influenza.	497
Table 100: Predicted and residual number of species used to treat influenza.	497

Table 101: Number and percent taxa in families used as insect repellent.	497
Table 102: Number and taxa in families used as insecticide.	497
Table 103: Predicted and residual number of species used as insecticide.	498
Table 104: Number and percent taxa in families used as intoxicants.	498
Table 105: Number and percent taxa in families used to treat malarial infections.	499
Table 106: Predicted and residual number of species used to treat malaria.	500
Table 107: Number and percent taxa in families used to treat measles.	501
Table 108: Regression analysis and Parameter estimates of used to treat measles.	501
Table 109: Predicted and residual number of species used to treat measles.	502
Table 110: Number and percent taxa in families used to treat muscular aches and pains.	503
Table 111: Regression analysis and Parameter estimates of plants used to treat muscular aches and pains.	503
Table 112: Predicted and residual number of species used to treat muscular aches and pains.	504
Table 113: Number and percent taxa in families used as a purgative.	504
Table 114: Regression analysis and Parameter estimates of plants used to treat ringworm.	504
Table 115: Predicted and residual number of species used to treat ringworm.	505
Table 116: Number and percent taxa in families used as shampoo.	505

Table 117: Regression analysis and Parameter estimates of plants used as shampoo.	505
Table 118: Predicted and residual number of species used as shampoo.	506
Table 119: Number and percent taxa in families used to treat skin conditions.	506
Table 120: Number and percent taxa in families used as skin irritants.	506
Table 121: Regression analysis and Parameter estimates of plants that cause skin irritation.	507
Table 122: Predicted and residual number of species used as skin irritants.	507
Table 123: Number and percent taxa in families used to treat snakebite.	507
Table 124: Regression analysis and Parameter estimates of plants used to treat snakebite.	507
Table 125 : Predicted and residual number of species used to treat snakebite.	508
Table 126: Number and percent taxa in families used as soap.	508
Table 127: Number and percent taxa in families used to treat sores.	509
Table 128: Predicted and residual number of taxa used to treat sores.	510
Table 129: Number and percent taxa in families used to treat sprains.	511
Table 130: Number and percent taxa in families used to treat syphilis.	511
Table 131: Regression analysis and Parameter estimates of plants used to treat teeth infections.	511

Table 132: Predicted and residual number of species used to treat teeth infections.	511
Table 133: Number and percent taxa in families used for making tonics.	512
Table 134: Regression analysis and Parameter estimates of plants used for making tonics.	512
Table 135: Predicted and residual number of species used for making tonics.	513
Table 136: Number and percent taxa in families used as toxic (harmful / poisonous) plants.	514
Table 137: Regression analysis and Parameter estimates of toxic (harmful / poisonous) plants.	514
Table 138: Predicted and residual number of species used as toxic (poison / harmful) plants.	514
Table 139: Number and percent taxa in families used to treat tuberculosis.	515
Table 140: Regression analysis:and Parameter estimates of plants used to treat tuberculosis.	515
Table 141: Predicted and residual number of species used to treat tuberculosis.	515
Table 142: Number and percent taxa in families used to treat ulcers.	516
Table 143: Regression analysis and Parameter estimates of plants used to treat ulcers.	516
Table 144: Predicted and residual number of species used to treat ulcers.	516

Table 145: Number and percent taxa in families used to treat urinary bladder infections.	516
Table 146: Number and percent taxa in families used to treat whooping cough.	517
Table 147: Regression analysis and Parameter estimates of plants used to treat whooping cough.	517
Table 148: Predicted and residual number of species used to treat whooping cough.	517
Table 149: Tree species in 250 m² forest plot at Kamana.	518
Table 150: Tree species in 250 m² forest plot at Kato.	520
Table 151: Tree species in 250 m² forest plot at Kopinang.	522
Table 152: Tree species in 250 m² forest plot at Waipa.	524
Table 153: Use values of the families obtained at Kamana.	526
Table 154 : Use values of the families obtained at Kato.	526
Table 155: Use values of the families obtained at Kopinang.	527
Table 156: Use values of the families obtained at Waipa.	527
Table 157: Summary of the Flora of the Potaro-Siparuni Region and medicinal Flora of the study site.	567
Table 158: Medicinal use categories and number of species used to treat each category at Kamana	575

Table 159: Medicinal use categories and number of species used to treat each

category at Kato **579**

Table 160: Medicinal use categories and number of species used to treat each

category at Kopinang **583**

Table 161: Medicinal use categories and number of species used to treat each

category at Waipa **586**

List of Figures

Figure 1: Pie chart showing percent medicinal species used as analgesic plants.	528
Figure 2: Pie chart showing percent medicinal species that are used for treating arthritic pain (anti-arthritic).	528
Figure 3: Line of best fit of plants that are used to treat arthritis.	529
Figure 4: Pie chart showing percent medicinal species that are used for treating diarrhea.	530
Figure 5: Graph showing the line of best fit of plants that are used as anti- diarrheal agents.	531
Figure 6: Pie chart showing percent flora of Region that are used as anti- dysenteric plants.	532
Figure 7: Line of best fit of plants that are used to treat dysentery.	533
Figure 8: Pie chart showing the percent of medicinal species that are used as anti-helminthic plants.	534
Figure 9: Pie chart showing percent families of the Region that are used for treating intestinal worm infections (anti-helminthic).	534
Figure 10: Pie chart showing percent medicinal species that are used to treat genital herpes (anti-herpetic).	535
Figure 11: Pie chart showing percent families of the Region that are used to treat genital herpes.	535

Figure 12: Line of best fit of plants that are used to treat genital herpes.	536
Figure 13: Line of best fit of plants that are used to treat inflammation (anti-inflammatory).	537
Figure 14: Pie chart showing the percent of medicinal flora that are used as anti-irritants.	538
Figure 15: Pie chart showing percent medicinal species that are used as anti- pruritic (anti-itching) agents.	538
Figure 16: Line of best fit of plants that are used to treat itching (anti-pruritic).	539
Figure 17: Pie chart showing percent medicinal species that are used as anti- pyretic agents.	540
Figure 18: Pie chart showing percent flora of the Region that are used as anti- pyretic plants.	540
Figure 19: Line of best fit of plants that are used to treat fevers (anti-pyretic).	541
Figure 20: Pie chart showing percent medicinal species that are used for treating asthma (anti-asthmatic).	542
Figure 21: Pie chart showing percent medicinal species that are used for treating back pain.	542
Figure 22: Pie chart showing percent medicinal species that are used for treating “bush yaws”.	543
Figure 23: Line of best fit of plants that are used to treat cold sweat.	544

- Figure 24: Pie chart showing percent medicinal flora that are used for treating conjunctivitis (anti-conjunctivitis). 545**
- Figure 25: Pie chart showing percent medicinal species that are used for treating coughing. 545**
- Figure 26: Pie chart showing percent medicinal species that are used for treating superficial cuts and wounds. 546**
- Figure 27: Pie chart showing percent medicinal species that are used for treating diabetes (anti-diabetic). 546**
- Figure 28: Pie chart showing percent medicinal species that are used for treating eczema. 547**
- Figure 29: Pie chart showing percent medicinal species that are used as emetics. 547**
- Figure 30: Line of best fit of plants that are used as emetics. 548**
- Figure 31: Pie chart showing percent medicinal species that are used as emollient agents. 549**
- Figure 32: Pie chart showing percent medicinal species that are used as fish poison. 549**
- Figure 33: Pie chart showing percent medicinal species that are used for treating fungal infections (anti-fungal). 550**
- Figure 34: Percent flora of the Region that are used for treating fungal infections. 550**

Figure 35: Graph of number of taxa in family versus family of plants used to treat hepatitis.	551
Figure 36: Graph of percent species used versus family of plants used to treat hepatitis.	551
Figure 37: Pie chart showing percent medicinal species of Region that are used for herbal baths.	552
Figure 38: Pie chart showing percent flora of the Region that are used for herbal baths.	552
Figure 39: Graph of number of taxa in family versus family used to treat itchy scalp.	553
Figure 40: Graph of percent species used versus family of plants used to treat itchy scalp.	553
Figure 41: Pie chart showing percent medicinal species that are used for treating influenza.	554
Figure 42: Pie chart showing percent families of the Region that are used for treating influenza.	554
Figure 43: Pie chart showing percent families of the Region that are used for treating jaundice.	555
Figure 44: Pie chart showing the percent medicinal species that are used for treating malaria (anti-malarial)	555

- Figure 45: Pie chart showing percent medicinal species of the Region that are used for treating migraine. 556**
- Figure 46: Pie chart showing percent families of the Region that are used for treating migraine. 556**
- Figure 47: Pie chart showing percent medicinal species that are used for treating muscular aches and pains. 557**
- Figure 48: Pie chart showing percent families of the Region that are used for treating ringworm infections. 557**
- Figure 49: Pie chart showing percent flora of the Region that are used for treating ringworm infections. 558**
- Figure 50: Graph of number of taxa in family versus family of plants that are used to treat scaling skin. 558**
- Figure 51: Graph of percent species used versus family of plants used for treating scaling skin. 559**
- Figure 52: Pie chart showing percent families of the Region that are used as shampoo. 559**
- Figure 53: Pie chart showing percent families of the Region that are used for treating skin conditions. 560**
- Figure 54: Graph showing line of best fit of plants that are used to treat sores. 561**
- Figure 55: Pie chart showing percent medicinal species that are used for treating**

thrush. 562

Figure 56: Pie chart showing percent families of the Region that are used for

treating thrush. 562

Figure 57: Pie chart showing percent medicinal species that are used for making

tonics. 563

Figure 58: Pie chart showing percent medicinal species that are used for

treating tuberculosis. 563

Figure 59: Pie chart showing percent families of the Region that are used

for treating tuberculosis. 564

Figure 60: Pie chart showing percent families of the Region that are used for

treating ulcers (anti-ulcerogenic). 564

Figure 61: Pie chart showing percent medicinal species used to treat venereal

diseases. 565

Figure 62: Pie chart showing percent families of the Region that are used for

treating whooping cough. 565

Figure 63: Pie chart showing percent medicinal species used for treating

whooping cough. 566

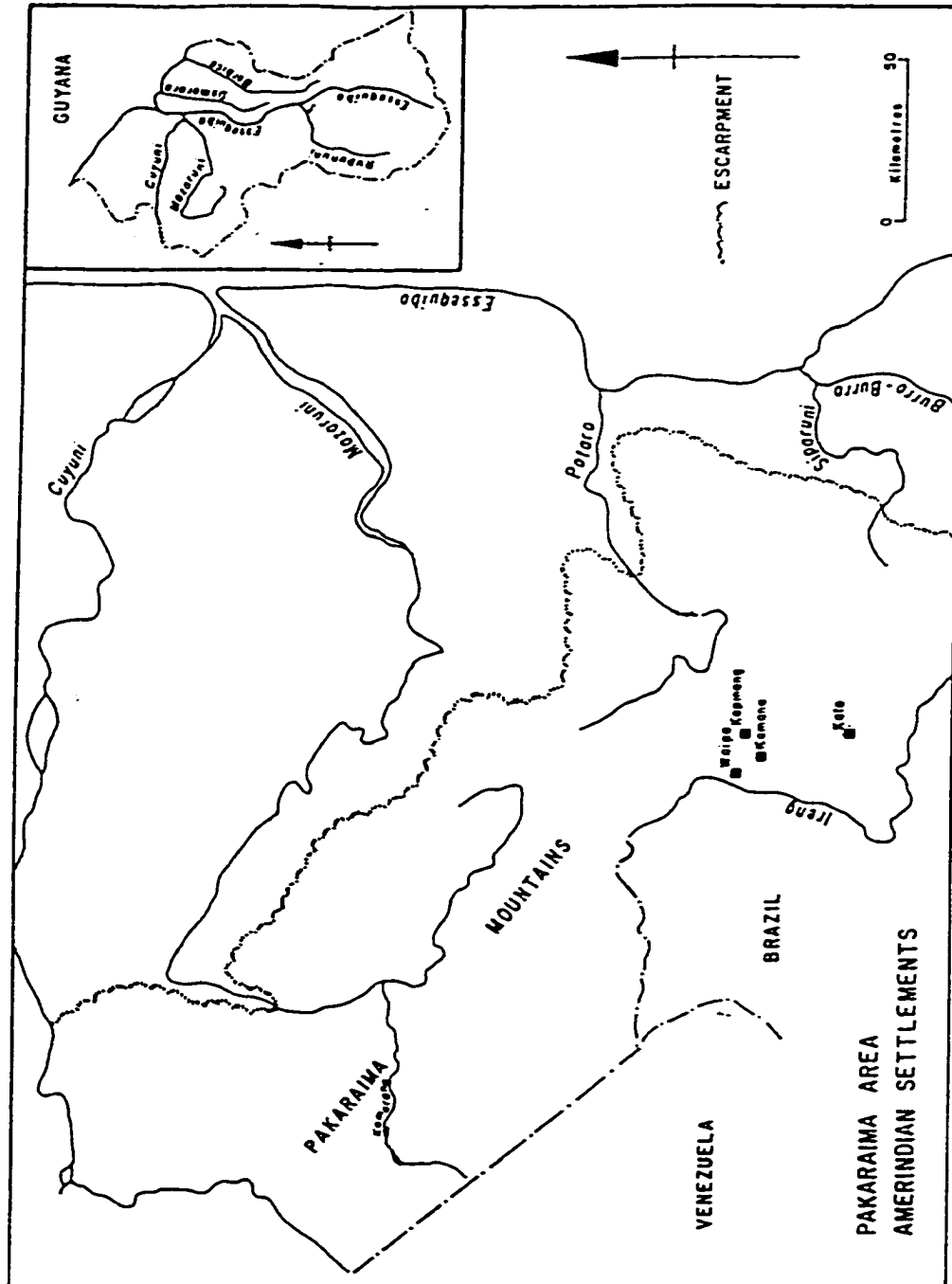
Figure 64: Pie chart showing percent families of the Region that are used

for treating deep wounds. 566

Map of Study Sites

The villages of Kamana, Kato, Kopinang and Waipa are shown.

(adapted from Forte, 1990).



Chapter 1

Introduction

Among the crises that threaten humans are the destruction of tropical rainforests and the widespread poverty of people in rural areas of the world. As many of these rural people inhabit and make their livelihood from tropical forests, the fates of the forest and the rural communities are very closely linked. This is even true when a community is isolated from business centers and where communication systems are non-existent.

There has been an emerging cross-disciplinary interest in the link between forests and the people who dwell in them (Durning, 1994; Lugo, 1995). Some tribal people solely rely upon the forest for all their needs, including health care. Therefore, the rate of the disappearance of the forest will directly affect the rate of disappearance of its people. Those interested in biological conservation have come to realize that tropical forests are never uninhabited, and conservation efforts must include the local or indigenous human population (Ryan, 1992).

Although there is an increase in the worldwide attention to issues pertaining to the biodiversity in tropical rainforest (Lugo, 1995; Ryan, 1992), the traditional role of its indigenous people is not being systematically investigated, especially in Guyana. A particular problem is that the shaman's knowledge is disappearing rapidly among Guyana's Indians (pers. obs.). Very few shamans remain alive among the tribes of Guyana (pers. comm., Amerindian guides in various regions). If the shamans disappear,

there will be no documentation of their knowledge of the forests, and a void will be created which can never be filled.

Guyana's Patamona Indians live in a mountainous region (officially designated as Region 8 by the Government) so remote that it has been scarcely profitable for timber companies to penetrate their area. Miners have caused some ecological degradation to Patamona lands (pers. obs.), but the tribe still inhabits reasonably intact forest and savanna ecosystems. Therefore, the remote character of Patamona lands has been important. This follows a global pattern in which indigenous peoples that retain some cultural wealth are to be found in forbidding terrain, "remote habitats" that also contain rare plant and animal species (Durning, 1993). Because of this refuge effect "the biosphere's most diverse habitats are usually home to endangered cultures" (Durning 1993).

The role of ethnobotany is to record the plant knowledge that peoples such as the Patamona have built up over many generations of intimate familiarity with their environment. It would be unwise to assume that Indian groups surviving today will be with us into the foreseeable future. Almost ninety Brazilian Indian groups have become extinct in this century. In addition to the human tragedy, each loss represents "the loss of a treasury of information about useful plants" (Prance, 1982). Ethnobotanical studies can record this information before it is too late, preserving knowledge for posterity (Prance, 1982).

I hope this ethnobotanical survey of Guyana's Patamona Indians will preserve a record of Patamona ethnobotany, which would be especially important should that knowledge eventually wither away. I also present a standardized methodology for studying and reporting ethnobotanical healing methods, which should be useful because:

- (1) the reporting and documentation of illnesses relative to plant uses is more useful than descriptive anecdotes;
- (2) the biomedical potency of traditional remedies can be assessed;
- (3) comparison of ethnomedical systems and cross-cultural research can be facilitated.

Browner *et al.* (1988) and Ortiz de Montellano & Browner (1985) suggest such methods, which I detail below.

Literature Review

The Patamona are a tribe living in west-central Guyana (Region 8 of Guyana) in the Pakaraima Mountain Range near the Potaro, Kopinang, and Ireng Rivers. They are believed to number about 4700, ten percent of the Amerindians in Guyana (Forte, 1990). The Patamona live in both savanna and forest environments, but even savanna Patamona utilize forest resources (pers. obs.). For example, the Patamona villages of Kopinang and Chenapou are in forest, whereas the village of Waipa (near the mountain Kopinang) is in savanna, where residents walk to the forest to hunt and to practice "slash and burn" agriculture. It is a Patamona tradition to farm at some distance from the settlement (pers. comm., Patamona guides).

There was no published work on the Patamona before the twentieth century, when they received brief mention by Gillin (1945) in the Handbook of South American Indians. I visited the Caribbean Research section in the Library of the University of Guyana and found over 100 references available. Only two were relevant to this study.

Medical anthropologist Joan Rayfield spent three months in 1956 among the Patamona. She studied their diet and hygiene but no publications were issued (pers. comm., Joan Rayfield).

There have been general anthropological studies of some Guyanese Amerindian tribes. Kloos (1972) sketched in the general history of Guyanese Amerindians since the British and the Dutch colonized the area and noted that, unlike the Dutch, the British colonizers did not forbid missionary activity. Kloos briefly described the nine present-day Amerindian tribes in Guyana: the Akawaio, Arawak, Arekuna, Carib, Macushi, Patamona, Waiwai, Wapishana, and Warrau. A long generalized description of Amerindian tribes throughout the Guianas is given by Gillin (1945). He did not describe the Patamona specifically, except to say that they are part of the Carib language group.

Much original anthropological work in Guyana was done by A. Butt-Colson (formerly A.J. Butt), whom Kloos (1972) noted was the first anthropological researcher in Guyana after World War II. A brief summary of all known tribes in Guyana, French Guiana, and Suriname was presented by Butt (1965), but her main work was done among the Akawaio, another Cariban-speaking tribe. She considered the Patamona "closely

allied to the Akawaio" (Butt, 1965). An important contribution of Butt-Colson is her information on Akawaio tribal medicine. An exhaustive study by Butt-Colson (1976) of illness among the Akawaio in the Mazaruni region of Guyana focused upon the psychological and social aspects of treatment, analyzing the symbolic aspects and categorization of disease etiology, and the diagnosis and treatments employed by individuals and shamans. Descriptive accounts of the folk remedies commonly used for headaches, ulcers, diarrhea, fevers and so forth were included. The Akawaio cures operate on humoral principles such as hot-cold, bitter-sweet and wet-dry (Butt-Colson, 1976; Butt-Colson & Armellado, 1983). Botanical preparations used for healing should belong to the category of hot things, either by their nature or because of their method of preparation. Forest creeper plants, such as *Aristolochia daemoninoxia* and *Peperomia* sp. are made into infusions for stomach disorders or colds. Pepper fruits (*Capsicum frutescens*) and ginger root (*Zingiber officinale*) are also used for a variety of ailments, all of which are conceptualized to require hot remedies (Butt-Colson, 1976). The notion that the placebo effect alone is responsible for the therapeutic effects of such infusions seems implausible, since many of these species have known biologically active principles (Etkin, 1990).

Audrey Butt-Colson also explored at length the importance of the shaman in Akawaio village life (Butt-Colson, 1977). At the time she was studying them in the 1950s, the Akawaio shaman was a successful figure, and she herself knew or knew of

fifteen shamans and shaman pupils (Butt-Colson, 1977). The Wapishana had one or two shamans (called piaimen in Guyana), in every village as late as 1989 (Forte 1989).

However, my understanding is that the profession is dying out today throughout Guyana, and I am told by Patamona guides that there are only two Patamona piaimen left, both elderly men.

The Makushi, an upland savanna tribe in the Carib linguistic group, were studied by Myers (1944,1945). Myers documented detrimental modification of Makushi culture through contact with Westerners. At one time this even led to widespread hunger, a tragically ironic circumstance among Amerindians, who are renowned for their ability to find and grow food in their environment (Myers, 1945; Prance, 1982). Kirchoff (1945) studied the Warau, a tribe living near the Pomeroon River in Guyana, not linguistically related to other Amerindians. Like the Akawaio, their shaman tradition relies in part on the drinking of tobacco juice on an empty stomach. However, Kirchoff has no information on Warau curing methods.

The Wapishana, an Arawak-speaking tribe of the south Rupununi savannas, have been studied by Forte (1989). Like the savanna Patamona, the Wapishana travel to the forest for hunting, fishing, and farming. Interestingly, the Wapishana and Makushi claim that there are uncontacted primitive Amerindian tribes that rely on hunting and gathering living not far from them in the interior (Forte, 1989). Forte cites the discovery of the Akuriyos in Suriname in the late 1960s, after they had been dismissed as figments of the

imaginations of other Suriname tribes (Forte, 1989).

Less research has been done on ethnobotany in Guyana. Wood (1944) describes the discovery of curare, a useful poison used by Amerindians in Brazil and Guyana. Subsequently it was imported to the West as a treatment for tetanus. Austin and Bourne (1992) reviewed ethnobotanical research in Guyana, noting that while Guyana is culturally a Caribbean country, it has not received the ethnobotanical attention that has been given to many Caribbean countries. Austin and Bourne were able to find no papers on medical ethnobotany in Guyana. Subsequently, they addressed the problem by interviewing three Guyanese knowledgeable in bush medicine, compiling a list of 55 plants and their uses, and collecting voucher specimens.

This traditional approach to ethnobotany is not time-consuming in the field, and produces easily communicated information of an often colorful nature. However, some ethnobotanists have written of a need to turn away from these simple list-based studies to ethnobotany that is more medically and statistically analytical. For example, while Prance et al. (1987) found many references in the literature to the usefulness of the Amazonian forest to its indigenous tribes, they found little quantitative data to support that important conservation issue. After a quantitative study in which they created an index of familial use value, they were able to make specific conservation proposals.

An ethnobotanical study of the Guyanese village Kurupukari by Johnston & Colquhoun (1996) showed that the authors were trying to get beyond a list of useful

plants to a quantitative analysis that would reveal meaningful patterns. In this village of Arawak, Wapishana, and Macushi residents, Johnston and Colquhoun found 120 species having a total of 246 plant uses. The largest use category, encompassing 39.4 % of species, was medicinal plants: most of these (17 species) were used to treat skin conditions, and 11 species were used to treat malaria. The authors produced frequency distributions of the number of species represented within 46 use categories, and other frequency distributions using broader-scale categories: food, commercial timber, medicinal, etc. They see such ethnobotanical investigations as the first step in a long process to bring non-timber products to sustainable commercial exploitation.

An important pioneer in the effort to give ethnobotanical studies statistical meaning is Daniel E. Moerman. Moerman (1979) noted that some earlier researchers had suggested that ethnomedicine was based essentially on self-healing responses (placebo effects) created by the personal respect due to tribal healers. He reasoned that if this were so, plants would be chosen not for medicinal properties but for symbolic reasons, and such plants would be randomly distributed among available plant genera. He performed a series of multiple linear regressions between the database of native American Medical Ethnobotany (AME) and another database, the Species Name List of Flora of North America (FNA). This revealed that medicinal plants were not chosen randomly. The least abundant plant families are not the least medicinally useful. For example, the small family Caprifoliaceae (7 genera, 77 species) was used medicinally 105 ways by different

North American Indian tribes.

In 1991 Moerman performed regression analysis using a much larger (and essentially complete) database on North American Indian medicinal plants. Several aspects of this study could be applied to ethnomedical work in Guyana. For clarity, I have numbered these points.

(1) Census vs. Sample:

Moerman's data set consists of 2295 species of North American plants that had 15,843 different medicinal uses for American Indians. For reasons he explains, this may be considered a complete listing, and therefore is not a sample but a census. A census allows "stronger inferences about human behavior" (Moerman, 1991). It also allows one to ask what is the relationship between the group of medicinal plants and the larger group of known plants in the region (in this case North America), a question Moerman notes is unusual in medical ethnobotany. It should be possible to create a census of one tribe's medical knowledge. The Patamona could be interviewed at each of their settlements and a complete picture of their medicinal plant use built up, which could be treated as a census.

(2) The set of Amerindians' medicinal plants equals the set of medicinal plants present:

Moerman states that plants that have medicinal value always have a record of medicinal use by local Amerindians. "No one ever finds a 'new' medicinal plant" Moerman writes

(1991), although investigators may find new medical uses for plants already in Amerindians' pharmacopeias. Ethnobotanical studies are only now getting underway in Guyana, and they should eventually result in a complete understanding of plants in Guyana that Western medicine may turn to for new drugs (pers. obs.). Both these plants and Amerindians' knowledge of them are probably largely extant at the present time, in contrast to the situation in Brazil, where many tribes have become extinct, taking their botanical knowledge with them, and many plant species themselves have become extinct due to deforestation (Prance, 1982).

(3) Least-squares regression analysis:

Relationships between the set of known plants available locally in the ecosystem and the set of local medicinal plants can be found by different methods, and should provide information on which families are most and least medicinally important. Simply counting medicinal plant species gives a distorted picture favoring large plant families. Using a percentage or index over-emphasizes small families.

In a regression analysis however, the linear equation $y = A + Bx$ represents the line of best fit through points on a graph in which the x-axis is the total number of species in each family (the independent variable), and the y-axis is the number of medicinal species in each family (the dependent variable). A is the y-intercept and B is the slope of that line. The equation is used to generate predicted numbers of medicinal species per family: how many medicinal plant species (y) should be found in a family (x) species

large. The actual value is subtracted from the predicted value, and gives a residual value. Positive residuals indicate that a family is being used more than is predicted by the regression. I used this system to see the medical importance or lack thereof of different plant families to the Patamona. Otto Gottlieb, a Brazilian phytochemist, can predict which families of flowering plants among the dicots are of medicinal / chemical interest and which are not (Gottlieb, 1985).

(4) Habit groups:

Moerman (1991) notes that non-botanists describe plants not by their families but by their habits. The same data can be organized by habit group. The following suggested groups are similar to Moerman's: trees, shrubs, lianas, forbs (non-grasslike herbaceous plants), grasses and grasslike plants, ferns, bryophytes, and fungi/lichens. In North America, Moerman found that trees and shrubs were used much more often than forbs, whereas grasses and grasslike plants were seldom used medicinally. A similar pattern emerges in Guyana (see Discussion).

Phillips & Gentry (1993) built on Moerman's technique in their study of non-indigenous mestizo ethnobotany in an area of Peru and discuss the increasing importance of statistical analysis in ethnobotany. The authors begin by developing the history of dissatisfaction with "compilation-style" ethnobotanical studies on grounds that they "lack methodological rigor" and often do not "define falsifiable hypotheses" and the subsequent move towards ethnobotanical studies that have statistical design. They also have several

suggestions on how best to interview subjects about plant uses: for example, interview each subject alone. Phillips and Gentry deal with many situations that can occur during field interviews: the same informant can provide different use profiles of the same plant species in different interviews (not a rare occurrence), and while a researcher may feel more comfortable interviewing a same-sex informant, the opposite sex may possess a different set of ethnobotanical knowledge.

Moerman (1971, 1991) used regression to show that medicinal plants are not chosen on the basis on their availability; that is, a highly medicinal family might be relatively rare. Another way to compare a plant family's medicinal usefulness with its availability is to rank families in order of residual values (the most medicinally useful family having the highest positive residual) and compare that ranking with an index calculated for each family, the Familial Importance Value, FIV (Mori *et al.*, 1983).

An FIV would be calculated for each plant family at each 1-hectare site. It is a combination of relative diversity, relative density and relative dominance:

$$\text{FIV} = [(\# \text{ of species in a family} / \text{total } \# \text{ of species}) + (\# \text{ of trees in family} / \text{total } \# \text{ of trees}) + (\text{basal area of family} / \text{total basal area})] \times 100.$$

The FIV of a plant family may vary for different 1-hectare plots. It is also possible that a plant family may have a different residual value for medicinal importance at different Patamona settlements. If the Patamona in general or the Patamona in one area depend heavily on a particular plant family for medicinal species (it has a highly

positive residual) but the family is relatively rare (its FIV is low near that community), that data would assist in conservation planning.

Ethnomedical studies that were conducted by anthropologists rather than botanists have approached the need for scientific vigor differently. Their solutions can also be applied to medical ethnobotany. Anthropologists have generally not had to manage large plant databases. Instead, they have had to record folk cures of illnesses that sometimes have no Western equivalent and attempt to separate within the curing process purely cultural aspects from scientifically measurable medical effects. The biomedical side of diseases in traditional societies has often been ignored in favor of the symbolic, semantic and psychological dimensions of illness (Anderson, 1991). It was often assumed that traditional remedies had no pharmacological properties which contribute to symptom alleviation or recovery, or at least not on a consistent basis (De Smet, 1991). It is important that the biomedical aspects of traditional remedies also be studied in tandem with sociocultural dimensions of the illness.

Browner *et al.* (1988) have broken down analysis of herbal medicines and other traditional cures into discrete steps, some or all of which may be applicable in a particular situation. Their method is designed to facilitate comparisons of traditional disease states and cures between cultures, and to compartmentalize and control differences in perception and background between investigators and indigenous peoples.

What follows is a combination of a three-part analysis method for folk illnesses

and their cures (Browner *et al.*, 1988), and a four-part method for analyzing herbal medicines (Ortiz de Montellano *et al.*, 1985). Steps (1) to (3) would take place in the field:

(1) Determine the symptoms of the disease or so-called "folk illness" for which a particular botanical remedy is prescribed. Record the culture-bearers' perceptions of the disease state without regard to whether they involve Western or non-Western concepts (such as loss of soul, etc.).

(2) Discover which plant (or plants) is used as an herbal medicine for this disease and make voucher specimens for later precise botanical determination.

(3) Determine what the plant medicine is supposed to do, again without regard to whether that would constitute a cure according to Western medical ideas. Steps (4) and (5) would take place in the academic or herbarium setting:

(4) Find the plants' known chemical constituents from the chemical literature and (if necessary) from bioassay.

(5) Determine the physiological effects of the compounds the plant is known to contain, by searching the pharmacological literature.

I applied this process to my Patamona data, and therefore I am able to make a judgement of the biomedical efficiency of ethnobotanical cures.

Medical ethnobotanical studies seek to gain for the West new knowledge of potential plant-derived drugs. In so doing, they preserve Amerindians' knowledge of

plant medicines. If that knowledge is lost, if the shaman tradition dies out in a particular tribe and the bulk of its botanical knowledge is forgotten, that need not be a complete tragedy if the traditional botanical knowledge has been recorded. In that case, at some time in the future, people from that tribe could reacquire the knowledge. These would probably be young people at the university experiencing a rebirth of pride in ethnic identity. As long as traditional medical and botanical knowledge is recorded, the door can never be slammed shut on cultural renewal.

In the case of Guyana, circumstances have fortuitously preserved both the nine Amerindian tribes and the majority of the forest cover. Low population, political conflicts, and low foreign debt have delayed deforestation. However, we cannot count on this situation continuing indefinitely. In order to properly protect Guyana's Amerindian heritage we should understand the effects of deforestation in neighboring countries.

In an analysis of deforestation in the Brazilian Amazon that made use of a geographic information system (GIS) and Landsat Thematic Mapper data, Skole and Tucker (1993) found that 6% of closed-canopy forest in Legal Amazon had been cleared as of 1988. Deforestation was strongly concentrated along the southern and eastern edges of Amazonia, and along major roads. Forest lying alongside areas of deforestation is affected by greater winds, larger changes in micro-climate, and penetration by hunters and cattle. This creates an "edge effect" which extends inwards 1 km. Edge effects and other disturbances caused by deforestation affected a further 15% of Legal Amazon.

Although a total of 21% deforestation and disturbance does not sound as bad as one might have feared, its effect on Amerindian tribes in the area has been severe. At least 87 tribes of Brazilian Amerindians were believed to have become extinct by 1970 (Prance, 1982). The pre-Columbian Amazonian population was probably 5 million; less than 500,000 Amerindians remain in Amazonia. Prance (1982) notes that with each tribe lost, "an entire body of knowledge built up over many centuries of contact with the local environment" was lost as well. Different tribes have different (if overlapping) botanical knowledge, therefore if a tribe becomes extinct, "botanical information unique to that group is lost" (Prance, 1982). Tribes need not become extinct for this to happen. Boom (1985a) describes the Chacabo of Bolivia, who lost many aspects of their culture in the few decades since missionary work began among them, and whose "culture is on the verge of extinction," (Boom, 1985a) although their numbers have more than doubled.

My study addressed the question of why the Patamona have only one elderly piaiman left. Based on my conversations with older Patamona, forty or fifty years ago there were several piaimen among the Patamona. These piaimen were elderly at that time. Previously, a piaiman would have an apprentice to whom he would pass his knowledge. About a generation ago, however, piaimen came to be seen as practitioners of witchcraft and doers of malevolent deeds. Herbal concoctions were thought to enable piaimen to change their shape from human to animal and back. I was unable to uncover the cause of this shift in attitudes towards piaimen. In Kopinang, the remaining piaiman is feared,

thought to have the power to send bad fortune. His opinions are solicited, and food is given to him after successful hunts, but no one has asked to become his apprentice. At Chiung, part of Kato village, the other remaining Patamona piaiman is widely respected, and Patamona from other villages come for his advice. This individual is more respected than feared, however he too is without an apprentice. Fortunately, ethnomedical knowledge does not reside exclusively with the two remaining Patamona piaimen, but rather is broadly distributed among the Patamona.

Studies and publications on the Patamona should help to preserve the tribe. One argument in favor of preserving the forest used by the Patamona is to show what percent of it is utilized by the tribe. I set out plots for this purpose. For example, the Chácobo have been shown to use 82% of the tree species at their Bolivian locality (Boom, 1985a). Another consideration is how the Patamona's use of forest/riverine habitat differs from their use of savanna habitat. For example, the Panare of Venezuela also have both savanna and forest villages, but they gather their useful plants almost exclusively from their forested areas (Boom, 1987).

Preservation of Patamona habitat would have many other benefits besides the obvious benefit to the tribe. A major problem in the tropics is loss of biodiversity. Primary tropical forest can contain 450 trees, with 150 species per hectare. After clearing for ranching, the same hectare will support one cow (Prance, 1982). This impoverishes not just the region, but the world. As Myers (1976) expressed it, "the spectrum of species

can be reckoned a repository of some of society's most valuable raw materials." For example, most plants which contain alkaloid phytochemicals are found in the tropics, and several plant-derived alkaloids have been found to have important medicinal use (pyrrolizidine and acronycine alkaloids have anti-tumor action, glycoside alkaloids have useful cardiac effects, others are used to treat leukemia and hypertension (Myers, 1976).

It is interesting to see whether the Patamona use palm species medicinally. Palms are usually used for food and construction. In visits to two Patamona villages I observed at least five palm species being utilized in several ways. Two palms were used medicinally. Moerman (1991) found no North American medicinal palm species. This is intuitively to be expected, as palms are typically utilized as food, and food plants tend not to be medicinal. "Food and medicine appear by this analysis to be substantially discontinuous categories" (Moerman, 1979: 118). However, the Chácobo Indians of Bolivia use five palm species medicinally; four of these have more important uses as food and construction material. One of their most useful palms (one which has a secondary medicinal use) is present at very low density, about 1 palm per hectare, and demonstrate the Chácobo need for substantial habit (Boom, 1986).

The oil of another palm species, *Jessenia polycarpa* is widely used in Colombia as a folk remedy, besides being edible. Balick (1979) states that "doctors have used [its oil] to treat tuberculosis and leprosy," whereas it is a "folk remedy used everywhere . . . in the treatment of pulmonary afflictions, tuberculosis, consumption, bronchitis, and

during childbirth". This demonstrates the need to fully explore the medicinal uses of palms. It is to be hoped that ethnobotanical work in Guyana will reveal further medicinal palms.

It is not just wild biodiversity that is at stake in preservation of Amerindian habitat. Amerindians typically seek out and propagate different plant varieties of their subsistence crops. An Arawak group in Brazil was found (Prance, 1982) to have 17 cultivars of cassava (*Manihoc esculenta*). The banana (*Musa* sp.), peach palm (*Bactris gassipaes*) and abiu fruit (*Pouteria caimito*) are also cultivated in many varieties. Different varieties of crop plants allow the Amerindians to plan for many successive harvests, and to utilize widely varying terrain for farming (Prance, 1982). Similar intensive cultivation of numerous plants has been studied among the Kayapo Indians of Brazil by Darrel Posey (Posey, 1982; 1984; 1988; 1989; Posey *et al*, 1987). As crops necessary to Western economies come under attack from pests, varieties grown by Amerindians can serve as sources for disease-resistant strains. This is an ongoing process: "the continuing evolution and dispersal to new areas of crop pests and diseases means that need for new germplasm will never cease" (Fearnside, 1982). An analysis of the conservation issues facing the Patamona should be of help not just to the Patamona, but should help preserve part of the heritage of Guyana.

Methods

I visited four Patamona villages, two villages per Patamona-habitat type. Kato and Kamana are savanna villages, whereas Kopinanag and Waipa are forest/riverine villages. I demarcated one 10 by 25 m plot per village, each of which I subdivided into 5 by 5 m subplots. There were ten subplots per village. I collected plants in these plots using the "inventory-interview" technique (Boom, 1986), in which plants are collected and local people are subsequently interviewed as to their uses. I also used several Amerindian guides while collecting, to direct me to medicinal plants.

For my analysis with respect to the family use values (Prance *et al.*, 1987), I modified the technique so as to better reflect the situation in these communities. Prance *et al.* (1987) that wood as a source of fuel was a minor use. Their calculation assigned a value of 0.5. In order to be comparable to Prance *et al.* (1987) study, I should rate fuel as 0.5, a minor use. However, I strongly disagree with the valuation of the Patamona fuels as minor. The importance of fuel and the high selectivity by the community of its source is of great importance in the Region. Thus I valued fuel at 1.0. A similar trend was observed by the Awa, Wood is a major use (Beck, pers. comm.).

I inquired about medicinal uses of lower plants (ferns, bryophytes, fungi), to make sure that these were not overlooked. Boom (1985b) encountered use of medicinal ferns among Bolivia's Chacobo Indians. Additionally, this inquiry ensured that later statistical "habit group" analysis following Moerman (1991) did not proceed from incomplete data.

I was also sure to use Patamona women as well as men as informants, and where possible, as field guides (Phillips and Gentry, 1993 note that women typically possess their own set of ethnobotanical information, especially about abortion and childbirth).

In the villages themselves I interviewed inhabitants about which medicinal plants they use, using the artifact / interview method (Boom, 1986). When recording data on folk illnesses and their cures, I followed the suggestions made by Browner *et al.* (1988) and Ortiz de Montellano *et al.* (1985). In the field, these are:

- (1) record the disease and its symptoms as perceived by the Patamona themselves.
- (2) record and make voucher specimens for the plants used as cures for the specific disease.
- (3) record what the Patamona conceive to be the precise action of the plant medicine.

At all times in the field, I was careful to ask my informants which parts of the plants they are using for medicinal purposes, how medicine is prepared and used (infusion, decoction, raw sap, etc.), and importantly, how much is administered to the patient and how often. Where possible, I directly observed and took notes on cures, and I traveled with a small accurate scale to measure dose amounts.

My lab work outside of the field fell into four avenues of action: identifying plants, completing the Browner / Montellano procedure, making extractions of phytochemicals, and following the Moerman statistical method.

First I determined all voucher specimens. Then I followed the remaining

Browner/Montellano suggestions (listed under Background Information), especially searching pharmacological and chemical literature to elucidate plants' medicinal potential.

For statistical analysis, I compiled a computerized database of all plants growing in the Patamona region, using collecting notes compiled by myself in previous collections, the Smithsonian inventory of the Kaieteur area, and further collection information housed at the National Herbarium of Guyana. I then compiled a further database of Patamona medicinal plants, and did multiple linear regressions to compare these databases. In this regard, the FERNS of the Region, which comprise the families Adiantaceae, Cyatheaceae, Dennestaedtiaceae, Lomariopsidaceae and Schizaeaceae (in the plants discussed in chapters 2-5), the ferns are grouped under the collective name Pteridophyta.

In Guyana, I worked in collaboration with health officers at the respective locations, and utilized the resources of the National Herbarium of Guyana, located at the University of Guyana. In the United States, I worked with Dr. Hans T. Beck of the New York Botanical Garden, and Dr. Robert DeFilipps of the Smithsonian Institution, National Museum of Natural History. Finally, I have suggested conservation strategies for the preservation of the Patamona people and culture. Specimens have been deposited at the National Herbarium of Guyana, and the Center for the study of Biodiversity at the University of Guyana. Some specimens are also housed at the New York Botanical

Garden, Institute of Economic Botany, Bronx, New York.

Chapter 2

Medicinal Plants of Kamana

Kamana, a village in the savanna habitat of the Northern Pakaraima Mountains at 4° 59' N and 59° 58' W, was surveyed for medicinal plants. Fifteen individuals were independently interviewed. Analysis revealed 62 families representing 39.24% of the families in the Region, 118 genera representing 15.01% of the genera in the Region and 136 species representing 7.55% of the flora in the Region, are used as medicinals. Twenty-two species are used for treating diarrhea, 15 species are used for treating "bush yaws", a certain type of sore that resists healing, 12 species are used for treating malarial infection, 6 species are anti-pyretics, 9 species are used for treating fungal infections, 6 species are used for treating asthma, 5 species are used for treating dysentery, 5 species are anti-menorrhagic plants, and 2 species are used for treating tuberculosis. The part of plant used, method of preparation and dosage / application are given. Appendix 5 gave details of medicinal use categories and the percent species in each family used for medicinal purposes at Kamana.

Family: Amaranthaceae

Botanical name: *Cyathula prostrata* Blume.

Common name: ou-la-lik-yao-ku--yik (Patamona).

Herb less than 1 m high in open savanna; flowers bluish white.

Use 1: Antiseptic.

Preparation: Juice from the macerated leaves is applied to cuts and bruises for rapid healing.

Dosage / Application: It is applied 3 times a day.

Use 2: Medicament for wounds.

Preparation: The leaves are macerated and applied to wounds to stop bleeding.

Collection voucher: Tiwari 1617.

Amarasterone A, amarasterone B, capitasterone, cyasterone, 5-epicyasterone and a derivative isocyasterone, potsterone, precyasterone and sengosterone, are insect hormones obtained from *C. capitata*. Cyasterone is also use as an anti-hyperglycaemic and an anti-lipidaemic agent (Buckingham, 1998).

Family: Annonaceae

Botanical name: *Anaxagorea* cf. *dolichocarpa* Sprague & Sandw.

Common name: tec-leu-yik (Patamona).

Tree 4-5 m high in secondary forest; trunk straight, diameter 10-12 cm; bark gray, with raised lenticels; sterile; wood sample taken.

Use 1: Anti-infective.

Preparation: The wood is burned, the ashes collected, and applied on to the umbilical cord near the navel where it was cut, to prevent infection and to assist healing.

Use 2: Herbal bath.

Preparation: The leaves are boiled, and the water used for bathing pregnant mothers.

According to the head-women in the village, the effect of this is to assist with the delivery.

Use 3: Muscle relaxant.

Preparation: The leaves are macerated, mixed with water, and drunk by pregnant women on the day of delivery of the baby to assist with muscle contraction and relaxation, so that the delivery process goes smoothly without complications.

Dosage / Application: 350-700 ml is taken at the onset of labor, and as needed thereafter.

Collection voucher: Tiwari 1523.

Anaxagoreine and a variant, (R)-form of the alkaloid asimilobine are obtained from *Anaxagorea* (Buckingham, 1998).

Family: Apocynaceae

Botanical name: *Aspidospermum excelsum* Benth.

Common name: po-le-ka-yik (Patamona).

Tree 13-14 m high; trunk fenestrated, straight, diameter 44 cm; bark gray, rough, 1-2 mm thick, with white latex and longitudinal fissures; fruit a pod, orbicular, flat, prickly, and with a sticky sap; wood cream colored, straight-veined, hard

Use 1: Analgesic for toothaches and pain.

The white latex is absorbed on cotton wool and inserted into cavities to ease toothaches and other pains.

Use 2: Anti-malarial.

Preparation: The bark is boiled, and the water drunk for malaria.

Dosage / Application: 250 ml is taken 2 times daily for 3-5 days.

Use 3: Medicament for eye infections.

Juice from the bark is applied to infected eyes for relief and cure.

Dosage / Application: Two drops are applied 2 times daily, morning and afternoon.

Use 4: Medicament for migraine headaches.

The white latex is mixed with water and inhaled to alleviate migraine and blocked sinuses.

Collection voucher: Tiwari 1413.

Verpoorte *et al.* (1982). reported anti-microbial activity against pathogenic bacteria and fungi using stem-bark extracts of *Aspidosperma excelsum* and *A. marcgravianum*.

Alkaloids from the genus *Aspidosperma* include alakine, aspidolbine, aspidocarpine, aspidolimidine, aspidolimidinol, kromantine and sitsirikine (Buckingham, 1998).

Botanical name: *Aspidosperma excelsum* Markgr.

Common name: none.

Tree 4-5 m high; trunk straight, diameter 10-14 cm; bark grayish, 2-4 mm thick.

Use 1: Anti-malarial.

Preparation: The inner bark is scraped, boiled with water and drink for malarial infection.

Dosage / Application: 175 ml is taken 2 times daily before meals.

Use 2: Medicament for chicken pox.

Preparation: The bark is boiled with water and use for washing the skin as treatment for chicken pox.

Dosage / Application: Done at least 2 times daily.

Collection voucher: Tiwari 1562 (see 1413).

Botanical name: *Aspidosperma ulei* Markgr.

Common name: chi-na-taik-yik (Patamona).

Tree 20-21 m high; trunk bent, fenestrated, diameter 25-30 cm; bark greenish-gray, 2-4 mm thick, with white latex and horizontal fissures; wood yellow; sterile.

Use: Anti-malarial.

Preparation: The bark is boiled, and the water used as a treatment for malaria.

Dosage / Application: 350 ml is taken 3 times daily for 4-5 days.

Collection voucher: Tiwari 1447 (see 1413).

Botanical name: *Himatanthus bracteatus* (A. DC.) Woods.

Common name: e-pui-kuii-yik (Patamona).

Tree 13-14 m high; trunk straight, diameter 18-20 cm; bark grayish white, with white latex; fruit green.

Use: Anti-malarial.

Preparation: The bark is stripped, boiled, and the water drunk as a treatment for malaria.

Dosage / Application: 175 ml is taken 2-3 times daily for 7-9 days.

Collection voucher: Tiwari 1470.

Cinnamoyl, a derivative of $C_{48}H_{84}O_2$ is isolated from *Himatanthus* sp. is used as an antineoplastic agent (Buckingham, 1998).

Family: Araceae

Botanical name: *Philodendron pedatum* (Hook.) Kunth

Common name: chim-o-ruk-ku-yik (Patamona).

Epiphytic; spathe and spadix pale yellow.

Use: Irritant.

The sap from this plant causes the skin to itch.

Collection voucher: Tiwari 1510.

Family: Arecaceae

Botanical name: *Jessenia bataua* (Mart.) Burret.

Common name: qua-ru-ma-yik (Patamona).

Tree 10-12 m high in forest; trunk straight; fruit green.

Use: Beverage/tonic.

Preparation: Fruits are used for making a beverage. The fruits are soaked in warm water to get soft, the seed coat is removed, and the remainder is macerated in cold water, strained, and drunk.

Collection voucher: Tiwari 1572.

Botanical name: *Oenocarpus* sp. (new record).

Common name: kung-yik (fine-leaf turu) (Patamona).

Tree 3-4 m high; branch 2-3 m long; sterile.

Use 1: Anti-pyretic.

Preparation: The roots are boiled, and the water drunk to alleviate fevers.

Dosage / Application: 350 ml is taken 2 times daily.

Use 2: Beverage/tonic.

Preparation: The fruits are used for making a beverage. It is first soaked in hot water, peeled, then ground and made into a drink.

Collection voucher: Tiwari 1584.

Family: Aristolochiaceae

Botanical name: *Aristolochia hians* Willd.

Common name: pau-zu-ma-yik (Patamona).

Climber with a pungent smell.

Use 1: Anti-asthmatic.

Preparation: The root and stem are boiled, and the water drunk as a treatment for asthma.

Dosage / Application: 175-350 ml is taken daily depending on the age of the patient.

Use 2: Medicament for colds.

Preparation: The vine is boiled, and the water drunk as a treatment for colds.

Dosage / Application: 175-350 ml is taken daily.

Collection voucher: Tiwari 1475A.

Several species of this genus contains aristolochic acid which exhibited anti-tumor activity and stimulate phagocytic activity (Mose, 1963; Batsford *et al.*, 1980). This compound also exhibited immunostimulant activity (Wagner *et al.*, 1985). Another species *A. indica* exhibited anti-fertility activity. The root extract contains p-coumaric acid, was reported to possess a potent pregnancy intercepting and fertility inhibiting activities (Pakrashi and Pakrashi, 1977, 1978; Pakrashi and Chakrabarti, 1978).

Family: Asteraceae

Botanical name: *Elephantopus mollis* H.B.K.

Common name: tu-kok-yik (Patamona).

Shrub less than 1 m high in savanna; flowers pale blue.

Use: Anti-fungal.

Preparation: The leaves are warmed over fire and tied against athlete's foot for healing.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 1613.

Molephantin, molephantinin, and phantomolin are obtained from *E. mollis* and used as antineoplastic agents (Buckingham, 1998).

Botanical name: *Mikania banisteriae* DC.

Common name: kai-pay-yik (Patamona).

Climber; flowers white.

Use 1: Anti-diarrheal.

Preparation: The leaves are boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken 2 times daily.

Use 2: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk to alleviate fevers.

Dosage / Application: 350 ml is taken 3 times daily.

Collection voucher: Tiwari 1540 (see 1552).

Botanical name: *Mikania micrantha* H.B.K.

Common name: wha-cau-yik (Patamona).

Shrub less than 1 m high; inflorescence cymose; flowers white.

Use 1: Anti-menorrhagic.

Preparation: The leaves are boiled, and the water drunk as a treatment for excessive bleeding.

Dosage / Application: 175 ml is taken every morning before meals over the period of the cycle.

Use 2: Medicament for chicken pox.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage / Application: This is done at least 2 times daily.

Use 3: Medicament for measles.

Preparation: The leaves are boiled with water and used for washing the skin as a treatment for measles.

Dosage / Application: This is done at least 2 times daily.

Collection voucher: Tiwari 1552.

6-hydroxy-3-oxo-4,11(13)-guaiadien-12,8-olide and mikanokryptin are among the compounds found in this plant. The Natural Products database (Buckingham, 1998) listed over 175 compounds linked to this plant .

Family: Bignoniaceae

Botanical name: *Tabebuia subtilis* Sprague & Sandw.

Common name: e-ma-war-ii-ya-pwa-li-yik (Patamona).

Shrub 3-4 m high; flowers white; fruit a curved, slender pod.

Use: Purgative.

Preparation: The bark is scraped, soaked in water overnight and drunk to prevent drunkenness.

Dosage / Application: 350-700 ml is drunk.

Collection voucher: Tiwari 1451.

Burnett and Thomson (1968) isolated lapachol, a and b-lapachone, dehydro-a-lapachone, 1-hydroxy-2-methyl- and 2-hydroxy-3-methylanthraquinone, lapachenole, dihydrolapachenole, nordihydrolapachenole, dehydrotectol tetrahydrotectol and its dimethyl ether, and 1-methoxynaphthalene from *Tabebuia chrysantha*. 1-

methoxynaphthalene according to the authors is the first naphthalenic intermediate on the biogenic pathway to the C₁₅ compounds and dimers.

Family: Bombacaceae

Botanical name: *Bombax flaviflorum* Pulle

Common name: kha-sawh-proc-yik (Patamona).

Tree 4-5 m high with a small buttress; trunk somewhat straight; fruit a capsule, furrowed, brown.

Use: Poison.

If swallowed, the endosperm will swell in the stomach and intestine, ultimately killing the individual.

Collection voucher: Tiwari 1578.

Family: Bromeliaceae

Botanical name: *Ananas comosus* Merr.

Common name: ah-pa-tuk-yik (Patamona).

Shrub less than 1 m high in weedy patch of forest; fruit a berry..

Use 1: Abortifacient.

Preparation: The immature fruit is eaten to abort a fetus less than 1 month old. Another method is to pulverize the very young fruit and drink the extract.

Use 2: Beverage/tonic.

Preparation: Fruit is grated, soaked in water, sweetened with sugar and used as a tonic and beverage.

Collection voucher: Tiwari 1533.

Ergosterol peroxide, found in the leaves of *Ananas comosus*, shows anti-tumor activity. Bromelains from another species possesses anti-inflammatory, anti-edemic, anti-coagulant, nematocidal and proteolytic properties (Buckingham, 1998).

Feruloylspermidine, diferuloyspermine, neurosporene, subaphyllene and, sinapoylputrescine are alkaloids from *Ananas*.

Family: Burseraceae

Botanical name: *Dacryodes nitens* Cuatr.

Common name: ou-ra-e-yik (Patamona).

Tree 8-10 m high; trunk straight, diameter 18-20 cm; bark greenish-gray, 2-4 mm thick with an aromatic odor; fruit a berry, green; wood pale yellow.

Use 1: Anti-arthritic.

Preparation / Application: The bark is warmed, and used as a bandage around joints for arthritis pain.

Use 2: Medicament for muscular aches and pains.

Preparation / Application: The bark is warmed and wrapped around swellings, or areas of muscular aches and pains for relief.

Collection voucher: 1410.

21-oxo-3, 4-seco-4(23), 12-oleanadien-3-oic acid; 21-oxo-3, 4-seco-4(23), 12-ursadien-3-oic acid; epi-alpha-amyrin and 12-ursen-3-ol are obtained from species of *Dacryodes*. 12-ursen-3-ol exhibited antineoplastic activity (Buckingham, 1998).

Botanical name: *Dacryodes* cf. *nitens* Cuatr.

Common name: ou-ra-yik (Patamona).

Tree 6-7 m high; trunk bent, diameter 12-14 cm; bark gray, flaky; 2-3 mm thick with an aromatic smell; wood cream colored, straight veined; sterile; wood sample taken.

Use 1: Anti-fungal.

Preparation: The inner bark is scraped and the juice applied onto ringworm, sores on the skin, or other forms of skin rash.

Dosage: This is done as often as possible.

Use 2: Anti-pruritic.

Preparation: The inner bark is boiled, and the water used as a cure for itching.

Use 3: Herbal bath.

Preparation: The inner bark is boiled, and the water used for bathing.

Use 4: Incense.

Wood is used as incense. It is lighted in houses to produce a sweet smell.

Use 5: Medicament for "bush yaws".

Preparation: The inner bark is used as poultice to tie around persistent sores on the skin.

Use 6: Medicament for sores.

Preparation: Extract (juice) from the bark is used for treating sores on the skin.

Collection voucher: Tiwari 1429 (see 1410).

Botanical name: *Protium sagotianum* March.

Common name: che-pau-yik (Patamona).

Tree 4-5 m high; fruit a berry, green turning black.

Use: Incense.

Wood is burned to give the surroundings, huts etc., a very fragrant smell.

Collection voucher: Tiwari 1495.

Family: Caesalpinaceae

Botanical name: *Bauhinia rubiginosa* Bong.

Common name: ka-wue-yeng-ku-ma-pu-yik (Patamona).

Woody liana with an undulating stem; sterile.

Use: Anti-diarrheal.

Preparation: The wood is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken daily before meals, indefinitely.

Collection voucher: Tiwari 1508.

Botanical name: *Bauhinia scala-simiae* Sandw.

Common name: kaw-ne-yeng-ku-ma-pu-yik (Patamona).

Woody liana; inflorescence terminal; flowers pale cream.

Use: Anti-diarrheal.

Preparation: The wood is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 175-350 ml is taken in the morning before meals, depending on the severity of the diarrhea.

Collection voucher: Tiwari 1545.

Botanical name: *Eperua falcata* Aubl.

Common name: wo-pa-yik (Patamona).

Tree 15-16 m high; bark with resin; fruit a reddish, curved pod, with a long pedicel.

Use: Medicament for sores.

Preparation: Resin from the bark is placed on warm leaves and tied around cuts and sores as a poultice.

Dosage / Application: It is applied 3-4 days.

Collection voucher: Tiwari 1528.

Eperuic acid and oleic acid are two of the many compounds obtained from *E. falcata*.

Oleic acid is a skin and eye irritant (Buckingham, 1998).

Botanical name: *Hymenaea courbaril* L.

Common name: kha-moui-lea-yik (Patamona).

Tree 14-15 m high; trunk straight, diameter 54-60 cm; bark brown, 1-2 cm thick; fruit a hard pod, brown; fruit separate.

Use 1: Analgesic for back pain.

Preparation: The bark is boiled, and the water and drunk as treatment for back pain.

Dosage / Application: 350 ml is taken 3 times daily indefinitely.

Use 2: Beverage/tonic.

Preparation: The bark is boiled, sugar added, and it is drunk as a beverage, tea, etc.

Collection voucher: Tiwari 1601.

Verpoorte and Dihal (1987) reported some anti-fungal activity using the bark extract of *Hymenaea courbaril*. Marisioli *et al.* (1975) reported the extraction of eperua-7, 13-dien-15-oic acid and other dipetenes from the bark of *H. courabaryl*.

Botanical name: *Swartzia bannia* Sw.

Common name: pa-ra-guay-yik (Patamona).

Tree 15-16 m high with a small buttress; trunk straight, diameter 20-22 cm; bark reddish-brown, 6-7 mm thick, flaky, with red sap; wood white, straight-veined.

Use: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1476B.

Family: Caricaceae

Botanical name: *Carica papaya* L.

Common name: map-pa-ya-yik (Patamona).

Shrub 4-5 m high; leaves lobed; bark with a milky white latex; fruit green.

Use 1: Anti-helmintic.

Preparation: The immature fruit is eaten as treatment for intestinal worm infection.

Dosage / Application: 1/2 fruit is eaten daily preferably in the night for 3 nights.

Use 2: Anti-malarial.

Preparation: Root is boiled with water and drunk as treatment for malarial infection.

Dosage / Application: 45 ml is taken 2 times daily for 1-2 weeks.

Collection voucher: Tiwari 1546.

Carpaine, an alkaloid found in the leaves of *Carica papaya*, has cardiotoxic effects.

Carica papaya also yields a proteolytic enzyme, Chymodiactin, that can be injected into herniated lumbar disks to treat sciatica and lumbar pain, and another proteolytic enzyme, Papain, which has anti-edemic, anti-inflammatory, and anti-helminthic properties is also found in this plant. 5-methyl-2-hexanone is a slight eye and skin irritant. 2-propanol present in the fruit aroma is a topical anti-infective agent, is an eye, skin and respiratory irritant, the liquid can cause corneal damage with direct contact and is a Central Nervous System depressant (Buckingham, 1998).

Family: Cecropiaceae

Botanical name: *Cecropia angulata* I.W. Bailey.

Common name: ka-mai-ying-yik (Patamona).

Tree 6-7 m high; fruit a berry, cream colored, loaded with ants.

Use 1: Anti-malarial.

Preparation: The fresh green leaves are boiled, and the water drunk as a treatment

for malarial infection.

Dosage / Application: 350 ml is taken 3 times daily.

This treatment is consider to be an effective remedy for the malarial parasite.

Use 2: Beverage.

Preparation: The leaves are boiled, and the water drunk as a tea or tonic.

Dosage /Application: 350 ml is taken 2 times daily indefinitely.

Use 3: Medicament for back pain.

Preparation: The leaves are boiled, and the water drunk as a treatment for back pain.

Preparation: 350 ml is taken 2 times daily, indefinitely.

Collection voucher: Tiwari 1505.

Family: Chrysobalanaceae

Botanical name: *Licania densiflora* Kleinh.

Common name: tung-seng-yik (Patamona).

Tree 8-10 m; trunk straight with small buttress, diameter 15 cm; outer bark grayish, the inner bark red, 1-2 mm thick with scattered lenticels; fruit a berry, brown; wood cream- yellow.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk to stop diarrhea.

Dosage: 125 ml is taken 3 times daily for 2-3 days.

Use 2: Medicament for biliousness.

Preparation: The bark is boiled, and the water drunk to "purify the blood." (Biliousness is believed to arise from impure blood. Bilious symptoms may be the onset of liver disease. The symptoms are relieved by this decoction).

Dosage: 125 ml is taken daily for 3-5 days. This decoction is bitter.

Use 3: Medicament for chicken pox.

Preparation: The inner bark is scraped, boiled, and the water used for treating chicken pox.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for measles.

Preparation: The inner bark is scraped, boiled, and the water used for treating measles.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: The inner bark is scraped and boiled, and the water used for treating sores.

Dosage: It is applied 2 times daily.

Collection voucher: Tiwari 1404.

Family: Clusiaceae

Botanical name: *Clusia cuneata* Benth.

Common name: mang-yik (Patamona).

Tree 4-5 m high with stilt roots; trunk straight, diameter 14-16 cm; bark grayish-white 2-4 mm thick, with yellow sap; fruit a berry.

Use 1: Anti-dysenteric.

Preparation: The root is boiled, and the water drunk for bloody dysentery.

Dosage / Application: 350 ml is taken 2 times daily.

Use 2: Medicament for "bush yaws".

The yellow sap or latex from the tree is applied on to persistent sores for rapid healing.

Dosage / Application: The latex is collected on a cotton swab and used for washing the affected area every night, or the latex is collected on a piece of cloth and wrapped around the affected area.

Collection voucher: Tiwari 1462.

Gustafson *et al.* (1992) isolated guttiferones A-D from the roots of *Symphonia globulifera* and guttiferone E and xanthochymol from the leaves of *Clusia rosea*. These compounds inhibited the cytopathic effects of in vitro HIV infection in human lymphoblastoid CEM-SS cells.

Botanical name: *Clusia scrobiculata* R. Ben.

Common name: mang-yik (Patamona).

Tree 12 m high; trunk straight, diameter 10-14 cm; fruit cream-yellow.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a treatment for diarrhea.

This decoction is considered to be very effective in treating diarrhea.

Dosage / Application: 350 ml is taken 3 times daily.

Use 2: Anti-dysenteric.

Preparation: Root is boiled, and the water drunk as treatment for dysentery or "bad-belly".

Dosage / Application: 350 ml is taken 3 times daily.

It is widely used in the village for this purpose.

Collection voucher: Tiwari 1485 (see 1462).

Botanical name: *Moronobea coccinea* Aubl.

Common name: mo-rum-bai-yik (Patamona).

Tree 6-7 m high; trunk straight, diameter 10 cm; bark grayish-red, 2-4 mm thick, with yellow latex and longitudinal fissures; fruit a berry, green; wood yellow, straight veined; wood sample taken.

Use 1: Antiseptic.

Preparation: The inner bark is scraped, boiled, and the water used as an antiseptic for various skin conditions.

Use 2: Herbal bath.

Preparation: The inner bark is scraped, boiled, and the water used for herbal baths.

Use 3: Medicament for chicken pox.

Preparation: The inner bark is scraped and rubbed on the skin as a treatment for chicken pox.

Dosage: It is applied as often as possible.

Collection voucher: Tiwari 1416.

Botanical name: *Symphonia globulifera* L.f.

Common name: mi-ta-king-yik (Patamona).

Tree 13-15 m high with stilt roots, buttressed; trunk straight, diameter 32 cm; bark reddish-brown, flaky, rough, 2-4 mm thick, with yellow latex and longitudinal fissures; fruit a berry, brown, in fascicles; wood yellow, straight-veined.

Use: Wax.

Latex from the bark is used as wax.

Collection voucher: Tiwari 1417 (see 1462).

Botanical name: *Tovomita calodictyos* Sandw.

Common name: mu-le-a-yik (Patamona).

Tree about 20 m high with a small buttress; trunk straight, diameter 22 cm; bark flaky with horizontal fissures, 7-8 mm thick, reddish-brown, latex pale yellow; flowers with numerous stamens; fruit green; wood cream-yellow.

Note: Stilt roots inconspicuous.

Use 1: Emollient.

Preparation / Application: The bark is heated and used as a poultice for sores and hard boils.

Use 2: Intoxicant.

Preparation: The fruit is boiled, and water drunk as a beverage to get intoxicated. The

fruit has as a sour taste.

Dosage / Application: 125 ml is taken as often as necessary.

Voucher number: Tiwari 1401.

Botanical name: *Tovomita schomburgkii* Planch. & Triana.

Common name: wa-ka-mik-yik (Patamona).

Tree about 6-7 m high with stilt roots; trunk straight, diameter 10-12 cm; outer bark greenish-gray, the inner bark red; ringed, 2-4 mm thick; wood brown, straight veined; sterile; wood sample taken.

Use 1: Aphrodisiac.

Preparation: The bark of the root is boiled and the water drunk.

Dosage / Application: 50 ml is taken 1-2 times daily.

Use 2: Medicament for back pain.

The bark of the root is boiled, and the water drunk.

Dosage / Application: 150 ml is taken 2 times daily.

Use 3: Medicament for impotence.

Preparation: The bark of the root is boiled, and the water drunk, enabling the user to satisfy sexual needs.

Dosage / Application: 150 ml must be taken over many days before it is effective.

Collection voucher: Tiwari 1421, 1441.

Botanical name: *Vismia amazonica* Ewan.

Common name: wa-ya-mak-yik (Patamona).

Tree 2-3 m high in savanna; fruit a berry, green.

Use 1: Anti-fungal.

Preparation: The orange-red latex from the bark is applied onto the skin to cure ringworm.

Dosage / Application: It is applied 3 times daily for 4-5 days for complete healing.

Use 2: Medicament for "bush yaws".

The bark and sap is applied to persistent sores for complete healing.

Preparation: The bark is warmed and tied around the affected area.

Collection voucher: Tiwari 1467.

Pasqua *et al.* (1995) reported the accumulation of Vismione A in regenerated plants of *Vismia guianensis* DC. Delle Monache *et al.* (1979) reported the isolation of Vismione A and B from the berries of another species *Vismia baccifera* var. *dealbata* H.B.K.

Family: Combretaceae

Botanical name: *Combretum* sp.

Common name: none .

Vine alongside bank of creek; fruit a berry, red.

Use: Emollient.

Preparation: The leaves are warmed and used as a poultice for sores, hard boils, etc.

Collection voucher: Tiwari 1610.

Family: Commelinaceae

Botanical name: *Tradescantia* sp.

Common name: ou-rai-yik (Patamona).

Herb prostrate to the ground; stem pale pink; flowers white.

Use: Medicament for colds.

Preparation: The leaves and stems are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1548.

Family: Costaceae

Botanical name: *Costus erythrothyrus* Loes.

Common name: ah-mang-pra-yik (Patamona).

Shrub about 2 m high; inflorescence terminal, red.

Use 1: Anti-asthmatic, for blockage of the respiratory system and difficulty in breathing.

Preparation: The stem is peeled and eaten like sugar cane as a treatment for asthma and to clear the respiratory system.

Dosage / Application: It is used regularly and indefinitely.

Use 2: Medicament for colds.

Preparation: Stems are peeled and chewed for treatment of colds.

Collection voucher: Tiwari 1589.

Dasgupta and Panday (1970) reported spasmodic uterine contractions using various extracts of the rhizomes of *Costus speciosus*. Saponins, diosgenin and tigogenin are found in the extracts.

Family: Cucurbitaceae

Botanical name: *Momordica charantia* L.

Common name: carilla bush (Patamona).

Vine spreading along weedy patch; flowers yellow; fruit green.

Use 1: Anti-diarrheal.

Preparation: The plant is boiled and the water drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken 3 times daily.

Use 2: Anti-hypertensive.

Preparation: The dried leaves and stems are boiled and the water drunk to lower high blood pressure.

Dosage / Application: 175 ml is taken daily for 5 days.

Use 3: Medicament for biliousness.

Preparation: The plant is boiled and a pinch of table salt is added to the water, which is drunk to treat biliousness.

Dosage / Application: 80 ml is taken 3 times daily for 5-7 days.

Collection voucher: Tiwari 1538.

Seed extracts of one species of Cucurbitaceae were reported to show antihelmintic activity. Cucurbitin being the main constituent (Shiao, 1962). Patel and Srinivasan (1997) reported the use of this plant as a possible treatment of diabetes. Verpoorte and Dihal (1987) reported antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Asperigillus niger*, and *Candida albicans* using extract from *Momordica charantia*. Chandravadana *et al.* (1997) reported anti-fungal activity of momordicines isolated from *Momordica charantia*. Anti-viral, cytostatic and cytotoxic activities were reported using crude extracts of *Momordica*. The crude aqueous extract inhibits guanylate cyclase activity (Takemoto *et al.*, 1980; 1983; Takemoto *et al.*, 1982a, 1982b). The protein, alpha momorcharin is isolated from this plant and can inhibit tumor growth, it possess anti-HIV activity and can induce abortion (Leung *et al.*, 1997).

Family: Cyperaceae

Botanical name: *Bulbostylis paradoxa* (Spreng.) Lindm.

Common name: wha-pi-a-pu-yik (Patamona).

Sedge about 20 cm high in burnt out area of savanna; flowers off-white with yellow stamens.

Use 1: Anti-diarrheal.

Preparation: The stolon is boiled and the water drunk as a treatment for diarrhea, especially in babies.

Dosage / Application: 15 ml is taken 3 times daily for 3-5 days.

Use 2: Anti-menorrhagic.

Preparation: The stolon is boiled and the water drunk to stop excessive bleeding at childbirth.

Collection voucher: Tiwari 1573.

Botanical name: *Rhynchospora cephalotes* (L.) Vahl

Common name: sa-laa-yik (Patamona).

Grass-like herb in savanna; flowers pale cream.

Use: Anti-infective.

Preparation: The dry sedge is burned and the ashes applied to the umbilical cord for rapid healing and to prevent infection.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 1615.

Botanical name: *Scleria arundinacea* Kunth.

Common name: sa-la-yik (Patamona).

Grass-like herb growing on forest floor; inflorescence paniculate; fruit a berry.

Use: Medicament for "bush yaws".

Preparation: The leaves are macerated and the juice used for treating persistent sores.

Collection voucher: Tiwari 1521.

Botanical name: *Calyptracarpa glomerulata* (Brongn.) Urban

Common name: mi-gam-bra-ga-ma-pui-yik (Patamona).

Sedge growing in open savanna; inflorescence brown.

Use: Anti-menorrhagic.

The roots are stripped, grated, boiled, and the water drunk in the morning before meals to relieve excess blood flow during the menstrual cycle.

Dosage / Application: 350 ml is taken daily over the cycle period.

Collection voucher: Tiwari 1462B.

Family: Cyrillaceae

Botanical name: *Cyrilla racemosa* L.

Common name: none.

Shrub 1-2 m high above falls; inflorescence spicate; flowers pale cream; fruits green.

Use: Anti-helmintic.

Preparation: The plant is boiled, and the water used treating for intestinal worms.

Dosage / Application: 35 ml is taken every night for 3-5 nights, depending on the age of the patient.

Collection voucher: Tiwari 1455.

Family: Dilleniaceae

Botanical name: *Davilla kunthii* St. Hil.

Common name: cat-oik-yik (Patamona).

Woody liana alongside creek; fruit a berry, green.

Use: Analgesic for back pain.

Preparation: The wood and the leaves are boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 350 ml is taken 3 times daily indefinitely.

Collection voucher: Tiwari 1496.

Botanical name: *Doliocarpus cf. macrocarpus* Mart. ex Eichl.

Common name: kata-whaik-yik (Patamona).

The famous water vine. Liana in wet forest; sterile; wood sample taken.

Use 1: Aphrodisiac.

Preparation: A concentrated mixture of the wood boiled with water is use as an aphrodisiac.

Use 2: Beverage / tonic.

Preparation: The dry wood is boiled with water and use as a tea or tonic.

Use 3: Medicament for impotence.

It is also considered an effective treatment for impotence.

Dosage / Application: 350 ml is taken 2 times daily indefinitely.

Collection voucher: Tiwari 1486.

Family: Elaeocarpaceae

Botanical name: *Sloanea cf. guianensis* (Aubl.) Benth.

Common name: kin-out-touy-yik (Patamona).

Tree 13-14 m high with slight buttress, trunk bent, 18-20 cm diameter; bark grayish-red, ringed, 2-4 mm thick; wood cream-yellow.

Use: Poison.

Spines on the fruit are considered poisonous.

Collection voucher: Tiwari 1437.

Family: Euphorbiaceae

Botanical name: *Amanoa* cf. *campestris* Aubl.

Common name: wat-sang-yik (Patamona).

Tree 10 m high; trunk straight, diameter 12-14 cm; bark gray, 1-3 mm thick; sterile; wood sample taken.

Use: Skin Irritant.

This plant causes severe skin irritation.

Collection voucher: Tiwari 1483.

Botanical name: *Croton hostmannii* Miq.

Common name: pe-li-pi-yik (Patamona).

Shrub about 1-2 m high in savanna; inflorescence a spike; flowers pale yellow.

Use: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as a treatment for diarrhea.

Dosage / Application: 175 ml is taken 2 times daily.

Collection voucher: Tiwari 1598.

Botanical name: *Pera glabrata* (Schott) Baill.

Common name: wang-yink-yik (Patamona).

Tree 4-5 m high in savanna; trunk straight, fruit green, cauliflorous.

Use: Medicament for sores.

Preparation: The bark is warmed and tied around sores as a poultice.

Collection voucher: Tiwari 1466.

Botanical name: *Phyllanthus acuminatus* Vahl

Common name: none.

Herb less than 1 m high in open savanna; flowers pale cream.

Use: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk for reducing fevers.

Dosage / Application: 175 ml is taken 2 times daily.

Collection voucher: Tiwari 1616.

Family: Fabaceae

Botanical name: *Clathrotropis macrocarpa* Kleinh.

Common name: ka-woi-yik (Patamona).

Tree 7-8 m high with a straight trunk, diameter 28 cm; bark ringed, possessing longitudinal fissures, gray, thin, and with paint-like odor; flowers minute, brown; wood yellow; wood sample taken.

Use 1: Anti-fungal.

Preparation: The bark is boiled, and the water and used for treating fungal infections.

Dosage / Application: It is applied 3-4 times daily.

Use 2: Medicament for athlete's foot.

Preparation: The bark is boiled, and the water used for treating athlete's foot ("ground itch").

Dosage / Application: It is applied as necessary.

Use 3: Medicament for "bush yaws".

Preparation: The inner bark is scraped and placed in warm water and used for washing persistent sores.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 1403.

Botanical name: *Eriosema crinitum* (H.B.K.) G. Don

Common name: none.

Shrub about 2 m high in savanna; fruit a pod, covered with hairs.

Use: Anti-malarial.

Preparation: The whole plant is boiled with water and drunk as a treatment for malarial infection.

Dosage / Application: 350 ml is taken 3 times daily for 5-7 days.

According to Mr. Cesario Williams, this plant is most effective in treating malaria. In most cases taking the decoction 4-5 days is enough to effect relief.

Collection voucher: Tiwari 1481.

Eriosematin A, eriosemaone B, eriosemaone C, eriosemaone D and a variant, (S)-form, of eriosemaone A, obtained from another species *E. tuberosum* are used as anti-fungal agents (Buckingham, 1998: *Eriosema*).

Botanical name: *Indigofera* sp.

Common name: en-a-ma-ra-kai-yik (Patamona).

Shrub less than 1 m high in open savanna; fruit a pod.

Use: Fish poison.

Whole plant is macerated and used in stagnant water as a fish poison.

Collection voucher: Tiwari 1624.

Botanical name: *Lonchocarpus* sp.

Common name: a-ya-yik (Patamona).

Shrub 2-3 m high; leaves compound; sterile.

Use: Fish poison.

The roots are used as a fish poison. They are soaked overnight in the stream, or water in which they have soaked is added to the stream. The fish will then float up to the surface and be easily caught.

Collection voucher: Tiwari 1550.

Botanical name: *Lonchocarpus floribundus* Benth.

Common name: ay-yaw-yik (Patamona).

Woody liana in secondary forest; sterile.

Use 1: Fish poison.

Preparation: The roots and stem are used as a fish poison. They are soaked in water overnight, then added to the water in streams, creeks, etc. Fish will float up to the surface and be easily caught.

Use 2: Insecticide.

Preparation: Roots are macerated, soaked in water overnight and used for washing the head to get rid of lice.

Collection voucher: Tiwari 1592.

Botanical name: *Pueraria phaseoloides* (Rosb.) Benth.

Common name: none.

Shrub about 15 cm high in savanna; flowers pale blue; fruit a pod.

Use: Anti-infective.

Preparation: The plant is boiled, and the water used as an anti-infective agent.

Dosage / Application: Medicament for acne.

Preparation: The plant is boiled, and the water used as a treatment for acne and boils on the face.

Collection voucher: Tiwari 1520.

Family: Gentianaceae

Botanical name: *Irlbachia alata* Maas

Common name: why-gouw-rouw-rai-yik (Patamona).

Shrub 1-2 m high; fruit green.

Use 1: Emollient

Preparation: The whole plant is macerated and used as an emollient agent.

Use 2: Laxative.

Preparation: The leaves are boiled, and the water drunk as a treatment for constipation.

Dosage / Application: 350 ml is taken in the night or early in the morning before meals.

Collection voucher: Tiwari 1555.

Botanical name: *Irlbachia purpurascens* (Aubl.) Maas

Common name: none.

Shrub less than 1 m high in savanna; flowers blue; fruit green.

Use 1: Laxative

Preparation: The leaves are boiled, and the water drunk as a treatment for constipation.

Dosage / Application: 350 ml is taken nightly for 2 nights.

Collection voucher: Tiwari 1529.

Family: Heliconiaceae

Botanical name: *Heliconia psittacorum* L.f.

Common name: pu-kra-way-yik (Patamona).

Shrub 1-2 m high; inflorescence pink and green.

Use 1: Analgesic for muscular aches and pains.

Preparation: The whole plant is boiled, and the water drunk to ease muscular aches and pains after being bitten by a scorpion, spider, etc.

Dosage / Application: 175 ml is taken 2 times daily for 2-3 days.

Use 2: Anti-histamine.

Preparation: The whole plant is boiled with water and drunk as a treatment for bee stings.

Dosage / Application: 175 ml is taken 2 times daily.

Collection voucher: Tiwari 1594.

Family: Hippocrateaceae

Botanical name: *Prionostemma cf. aspera* Lam.

Common name: a-ya-war-ii-yik (Patamona).

Liana, 12 cm diameter; bark greenish-yellow, about 1 mm thick with red sap; leaves opposite, very thin, papery.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk for diarrhea.

Dosage / Application: 250-750 ml is taken depending on the severity of the diarrhea and the age of the patient.

Use 2: Tonic.

The fruit is edible and is used as a tonic.

Use 3: Vitamins.

The fruit is edible and is a source of vitamins and minerals. The fruit must be heated

before being eaten.

Collection voucher: Tiwari 1400.

Delle Monache *et al.* (1979) reported the isolation of Prionostemmadione from the root-bark extracts of *Prionostemma aspera*.

Family: Icacinaceae

Botanical name: *Poraqueiba serica* Tul.

Common name: kha-la-pau-raie-yik (Patamona).

Tree 4-5 m high; diameter 10-14 cm; inflorescence cymose; flowers yellowish-green.

Use 1: Medicament for "bush yaws".

Preparation: The inner bark is scraped, placed in hot water, and used for washing persistent sores.

Dosage / Application: It is done as often as possible.

Use 2: Medicament for chicken pox.

Preparation: The inner bark is scraped, placed in hot water, and used for washing the skin as a treatment for the infection.

Dosage / Application: It is done as often as possible.

Use 3: Medicament for measles.

Preparation: The inner bark is scraped, placed in hot water, and used for washing the skin as a treatment for measles.

Dosage / Application: It is done as often as possible.

Collection voucher: Tiwari 1560.

Family: Lamiaceae

Botanical name: *Hyptis lantanifolia* Poit.

Common name: a-taa-reng-yi-pic-yik (Patamona).

Shrub 1-2 m high.

Use: Anti-fungal.

Preparation 1: The leaves are macerated and the extract warmed and applied to athlete's foot for healing.

Preparation 2: Also the warm leaf is tied on to the infected area for healing.

Dosage / Application: This is done as often as possible.

Collection voucher: Tiwari 1595.

Significant anti-infective, antiseptic and antimicrobial activity were obtained using methanolic extracts of *Hyptis albida*, *Hyptis pectinata*, *Hyptis suaveolens* and *Hyptis verticillata* against *Candida albicans*, *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonas aeruginosa*. *Hyptis oblongifolia* shows only anti-microbial activity. The most active compounds in these species are the flavonoids (Rojas *et al.*, 1992).

Botanical name: *Hyptis pectinata* (L.) Poit.

Common name: ou-rai-yik (Patamona).

Herb; inflorescence terminal, flowers white.

Use 1: Anti-asthmatic.

Preparation: The whole plant is boiled with water, and drunk as a treatment for asthma.

Dosage / Application: 350 ml is taken 2 times daily.

Use 2: Anti-tuberculosis.

Preparation: The whole plant is boiled, and the water drunk for tuberculosis.

Dosage / Application: 350 ml is taken 2 times daily indefinitely.

According to Dominique Williams this plant is also used for treating people with AIDS.

Use 3: Emollient.

Preparation: The leaves are macerated and applied around the affected area as a poultice.

Dosage / Application: It is applied at least 2 times daily.

Use 4: Insect repellent.

Preparation: Smoke from this plant is used to chase away Kabowra flies.

Use 5: Medicament for "bush yaws".

Preparation: The leaves are boiled, and the water used for treating persistent sores.

Collection voucher: Tiwari 1591 (see 1595).

Family: Lauraceae

Botanical name: *Endlicheria multiflora* (Miq.) Mez. vell. aff.

Common name: wung-yik (Patamona).

Tree 6-7 m high with a straight trunk, diameter 10 cm; bark greenish-gray, ringed, 3-4 mm thick with longitudinal fissures; wood cream-yellow; wood sample taken; sterile.

Use: Skin irritant.

The hairs on this plant cause the skin to itch.

Collection voucher: Tiwari 1406, 1482 (see 1409).

Botanical name: *Licaria canella* (Meissn.) Kosterm. Subsp. *canella* Kurz

Common name: su-lu-wa-bal-i-yik (Patamona).

Tree 15-16 m high; trunk bent, diameter 10-11 cm; bark greenish-gray, flaky, ringed, 2-4 mm thick; wood cream-yellow, straight-veined; sterile; wood sample taken.

Use: Medicament for warts.

The bark is used to treat warts on the skin. It is rubbed vigorously on the wart.

Dosage / Application: On average, 5-6 applications are necessary.

Collection voucher: Tiwari 1409.

Phenylethyl amides of benzoic acids isolated from fruits of another genus and species *Aniba riparia*, demonstrated antibacterial and antifungal properties (Barbosa-Filho *et al.*, 1987).

Botanical name: *Ocotea guianensis* Aubl.

Common name: wha-taw-chrow-yik (Patamona).

Tree 5-7 m high; fruit green, small.

Use: Herbal bath.

Preparation: The leaves are macerated, soaked in water overnight, and used by pregnant women for herbal baths in the morning and afternoon to facilitate childbirth.

Collection voucher: Tiwari 1544 (see 1409).

Family: *Lecythidaceae*

Botanical name: *Eschweilera* sp.

Common name: peg-ouw-wou-ru-yik (Patamona).

Tree 20-21 m high; trunk straight, diameter 58-60 cm; bark grayish-brown, flaky, 1-2 mm thick; wood red-orange; sterile; wood sample taken.

Use 1: Antiseptic.

Preparation: The inner bark is boiled until the water gets brown, is then allowed to cool, and used for washing burns for rapid healing.

Dosage / Application: It is applied as often as possible.

Use 2: Medicament for wounds.

Preparation: The inner bark and roots are boiled, and the water used for bathing wounds to prevent infection.

Dosage / Application: It is applied 2 times daily indefinitely.

Collection voucher: Tiwari 1476.

Verpoorte and Dihal (1987) reported some anti-fungal activity using the bark extract of *Lecythis* sp., another genus in the family.

Family: *Loganiaceae*

Botanical name: *Strychnos* sp.

Common name: ou-ra-rie-yik (Patamona).

Woody liana; 12-13 cm diameter; in forest canopy; fruit green.

Use: Poison.

The root and bark of this plant is used for poisoning the tips of arrows, for more efficient hunting.

Collection voucher: Tiwari 1480A.

Asai *et al.* (1982) reported that nine *Strychnos* alkaloids were isolated from the trunk of *Strychnos ligustrina* in his studies on folk medicine of Timor Island. These alkaloids are strychnine, brucine, b-colubrine, pseudostrychnine, pseudobrucine, pseudo-b-colubrine, strychnine-N-oxide, brucine-N-oxide and b-colubrine-N-oxide. Delle Monache *et al.* (1970) reported low toxicity, nicotine effects and neuromuscular blocking effects of tests of aqueous extracts of *Strychnos castelnaei*. Diaboline, jobertine and C-alkaloid D are also reported from this plant. Verpoorte (1978) in pharmacological studies of various species of *Strychnos*, found that extracts from *S. dinklagei*, *S. malacocladus* and *S. soubrensis*, causes tonic convulsions in mice. Clonic convulsions and/or muscle relaxation were observed when using extracts from other species. *Strychnos dolichothyrsa* showed muscle relaxant activity. Alkaloids are the principal compounds found, among them are 11-methoxydiaboline, 19,20-dihydro-11methoxydiaboline and normacusine in *S. malacocladus*; serpentine, akagerine and alstonine in *S. camptoneura*; bisnordihydrotoxiferine, bisnor-C-alkaloid H and caracurineV among the more than sixty alkaloids in *S. dolichothyrsa*. Rolfsen *et al.* (1978) reported strong convulsant

activity and a muscle relaxant effect using alkaloid extracts of *Strychnos dale* and *S. elaeocarpa*. The indole alkaloids isolated are 17-O-methyl-akagerine, kribine, 21-O-methyl-kribine and epi-21-O-methylkribine.

Family: Loranthaceae

Botanical name: *Phoradendron crassifolium* (Pohl. ex DC.) Eichl.

Common name: to-rung-chi-na-tu-yik (Patamona).

Parasitic vine; fruits red.

Use 1: Antiseptic.

Preparation: Leaves and stem are macerated, boiled with water and used as an antiseptic for wounds and sores.

Use 2: Medicament for "bush yaws".

Preparation: Juice from the macerated leaves and stem is applied onto persistent sores for healing.

Dosage / Application: It is applied as often as possible.

Use 3: Medicament for cuts and wounds.

Preparation: The leaves are macerated and the juice applied to cuts and wounds to stop bleeding.

Collection voucher: Tiwari 1450.

Petricic and Zadenka (1980) reported the presence of two unknown glycosides from the leaf extract of mistletoe (*Viscum album* L.).

Botanical name: *Phoradendron piperoides* (Kunth) Trel.

Common name: ka-ta-peek-yik (Patamona).

Parasitic vine; fruits green.

Use 1: Analgesic for hard boils.

Preparation / Application: The leaves are ground, warmed, and tied around the affected area.

Use 2: Medicament for sores.

Preparation / Application: The leaves are macerated, warm and applied onto sores for healing.

Use 3: Medicament for whooping cough.

Preparation: The whole plant is boiled, and the water drunk as a treatment for "baboon cough" or whooping cough.

Dosage / Application: 250 ml is taken daily for 7 days.

Collection voucher: Tiwari 1402, 1415 (see 1450).

Family: Lycopodiaceae

Botanical name: *Lycopodiella cernua* (L.) Pic. Ser.

Common name: why-king-lea-thu-yik (Patamona).

Spreading shrub in moist places; strobilus on erect fertile branches.

Use 1: Charm.

Preparation: The plant is boiled, and the water drunk until the user can drink no more,

then it is vomited out as a charm for the successful hunting of savanna deer.

Use 2: Purgative.

Preparation: Plant is boiled with water and taken to induce vomiting.

Dosage / Application: 350-700 ml is taken.

Collection voucher: Tiwari 1458.

Family: Malpighiaceae

Botanical name: *Brachypterys ovata* Juss.

Common name: none.

Shrub about 1m high on rock surface; flowers yellow color.

Use: Medicament for biliousness.

Preparation: Plant is boiled, and the water drunk for biliousness.

Dosage / Application: 175-350 ml is taken every day for 5 days.

Collection voucher: Tiwari 1460.

Botanical name: *Byrsonima concinna* Benth.

Common name: pauw-rik-yik (Patamona).

Shrub 3-4 m high in open savanna; flowers yellow; fruit a berry, green.

Use 1: Anti-diarrheal.

Preparation: The inner bark is scraped, boiled, and the water drunk for diarrhea.

Dosage / Application: 175-350 ml is taken 3 times a day for 3-4 days.

Use 2: Anti-microbial.

Dosage / Application: The brown powder from the back surface of the leaf is applied to the umbilical cord of babies for rapid healing without infection.

Use 3: Tanning agent.

Preparation: The bark is used for tanning leather. The bark is wrapped in skin and tightly folded or wrapped for maximum effect. Tanning is effected in about a week's time

Collection voucher: Tiwari 1453 (see 1660).

Botanical name: *Byrsonima pachypoda* Anders.

Common name: ko-pey-tak-wha-yik (Patamona).

Shrub in savanna; flowers pale pink with yellow stamens; fruit a berry, green.

Use: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk to treat diarrhea.

Dosage / Application: 175-350 ml is taken 3 times daily for 3-4 days.

Collection voucher: Tiwari 1454 (see 1660).

Botanical name: *Byrsonima verbasciifolia* H.B.K.

Common name: why-king-ba-na-yik (Patamona).

Shrub less 0.5 m high in savanna; inflorescence terminal; fruit a berry, green.

Use 1: Anti-diarrheal.

Preparation: The roots are boiled, and the water drunk for diarrhea.

Dosage / Application: 350 ml is taken daily until diarrhea stops.

Use 2: Anti-malarial.

Preparation: The bark of the root is boiled, and the water drunk for malaria.

Dosage / Application: 350 ml is taken twice daily for 5-7 days.

Collection voucher: Tiwari 1464 (see 1660).

Botanical name: *Stigmaphyllon martinianum* A. Juss. (synonym *S. sinuatum* (DC.) Juss.).

Common name: ma-ko-yik (Patamona).

Woody liana; flowers yellow; fruit a samara, pink.

Use 1: Analgesic for fevers.

Preparation: The leaves are soaked in water overnight and used as an herbal bath to reduce pain associated with fever.

Use 2: Anti-asthmatic.

Preparation: The leaves are macerated and soaked in cold water overnight. The water is drunk as a treatment for asthma and for clearing of the respiratory tract.

Dosage / Application: 45 ml is taken 2 times daily for 1-2 weeks.

Use 3: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 175 ml is taken 2 times daily for 5-7 days.

Collection voucher: Tiwari 1551.

Botanical name: *Stigmaphyllon sinuatum* (DC.) A. Juss.

Common name: ma-ko-yik (Patamona).

Liana in forest; leaves pale green above, whitish below; fruit separate.

Use 1: Anti-malarial.

Preparation: The leaves are boiled, and the water drunk as treatment for malaria.

Dosage / Application: 175 ml is taken 2 times daily.

Use 2: Blood purifier.

Preparation: The leaves are boiled, and the water drunk to purify the blood.

Dosage / Application: 350 ml is taken daily for 5 days.

This is a very bitter tonic, but easy to swallow.

Use 3: Herbal bath.

Preparation: The plant is macerated, boiled with water and used as an herbal bath to reduce high fevers.

Dosage / Application: It is done as often as possible.

Collection voucher: Tiwari 1484.

Family: Malvaceae

Botanical name: *Sida cordifolia* L.

Common name: qu-tuk-qua-tu-raie-yik (Patamona).

Herb less than 1 m high in savanna; flowers yellowish-orange.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk for reducing high fevers.

Dosage / Application: 75 ml is taken 2 times daily.

Use 2: Herbal bath.

Preparation: Whole plant is boiled, and the water used as an herbal bath.

Collection voucher: Tiwari 1614.

Family: Marcgraviaceae

Botanical name: *Norantea guianensis* Aubl.

Common name: pi-ri-e-wou-yik (Patamona).

Woody liana alongside creek; inflorescence a spike; flowers red; fruit green.

Use: Antiseptic.

Preparation: The bark is boiled, the water cooled a little, and used for bathing or washing wounds, sores, "bush yaws" and other skin infections.

Dosage / Application: This is done at least twice daily.

Collection voucher: Tiwari 1452.

Family: Melastomataceae

Botanical name: *Loreya mespiloides* Miq.

Common name: ah-pang-yik (Patamona).

Tree 10-11 m high; trunk straight, diameter 20-24 cm; bark yellowish, with slight yellow sap and a putrid odor.

Use: Medicament for bed-wetting.

Leaves of this plant are used as bedding for bed-wetters such as young children. It is also macerated and strapped around the groin region of these individuals.

Collection voucher: Tiwari 1564.

Botanical name: *Mouriri grandiflora* DC.

Common name: tap-reng-yeng-yik (Patamona).

Shrub about 1 m high; leaves simple, entire, glaucous green above, paler below; fruit small, covered with trichomes.

Use: Medicament for swollen stomach.

Preparation: The leaves are boiled, and the water drunk as a treatment for swollen stomach, especially in babies.

Dosage / Application: 15 ml is taken 3-4 times daily for 1-2 weeks on the average.

Dosage depends on the severity of the condition.

Collection voucher: Tiwari 1585.

Family: Meliaceae

Botanical name: *Carapa guianensis* Aubl.

Common name: ka-ra-bai-yik (Patamona).

Tree 10-12 m high; bark grayish-white, 2-3 mm thick; fruit brown.

Use 1: Analgesic for muscular aches and pain.

Preparation: The nut is grated, mixed with palm oil, and applied to the affected area.

Use 2: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as treatment for diarrhea.

Dosage / Application: 175 ml is taken 2 times daily.

Use 3: Anti-dysenteric.

Preparation: The nut is grated, mixed with hot water, and drunk as treatment for bloody dysentery.

Dosage / Application: 350 ml is taken 1-2 times daily.

Use 4: Anti-fungal.

Preparation: The nut is grated, mixed with palm oil, and used as a treatment for ringworm.

Use 5: Anti-menorrhagic.

Preparation: The nut is grated, boiled in one cup of water, and drunk as a treatment for excessive bleeding during the menstrual cycle.

Use 6: Medicament for chicken pox.

Preparation: The nut is grated, mixed with palm oil, and applied to the body to get rid of chicken pox.

Use 7: Medicament for skin conditions.

Preparation: The nut is grated, mixed with palm oil, and used as a treatment for dry skin.

Use 8: Medicament for sores.

Preparation: The nut is grated, mixed with palm oil, and used as a treatment for sores.

Collection voucher: Tiwari 1504.

Verpoorte and Dihal (1987) reported some anti-fungal activity using the bark extract of another species, *Carapa procera*.

Botanical name: *Trichilia pallida* Sw.

Common name: pa-na-tho-ro-yik (Patamona).

Tree 10-12 m high; trunk bent, diameter 14-16 cm; bark gray, ringed, 2-4 mm thick with raised lenticels; fruit a berry, green; wood cream colored, straight-veined.

Use 1: Anti-bacterial.

Preparation / Application: Juice from the inner bark is applied onto bacterial skin infections for rapid healing.

Dosage: It is applied 3-4 times daily for about 5-6 days.

Use 2: Medicament for sores.

Preparation: Juice from the inner bark is applied onto sores.

Dosage: It is applied 3 times daily.

Collection voucher: Tiwari 1430, 1432.

Family: Menispermaceae

Botanical name: *Abuta* sp.

Common name: kouw-noik-cou-pou-yik (Patamona).

Liana in canopy; sterile.

Use 1: Charm.

Preparation: The leaves are macerated and used to polish fishing poles, hooks, and lines for success in fishing.

Use 2: Emollient.

Preparation: The leaves are macerated and used as a poultice for cuts and sores.

Use 3: Medicament for eczema.

Preparation: The leaves are macerated and used as an ointment for treatment of infections.

Dosage / Application: It is applied in the night indefinitely.

Use 4: Medicament for skin conditions.

Preparation: The leaves are macerated and used as an ointment or skin lotion similar to cocoa butter, to get rid of unpleasant marks on the skin.

Dosage / Application : It is applied on to the skin every night before retiring to bed.

Collection voucher: Tiwari 1567.

Alkaloids, daurisolone, dauricolone and daurinoline from *Abuta dauricum* are used as muscle relaxant. Dammara-20, 25--diene-3, 24-diol from *A. racemosa* is used as an ant repellent. Norimeluteine and rufescine, a derivative from *A. imene* and *A. rufescens* is toxic to P388 cells (Buckingham, 1998).

Family: Mimosaceae

Botanical name: *Acacia paniculata* Willd.

Common name: ka-la-laik-yik (Patamona).

Shrub 4 m high in secondary; bark 1-2 mm thick, grayish-green.

Use 1: Anti-inflammatory.

Preparation: The stem and leaves are macerated and the extract dropped into the eyes as a treatment for eye infections.

Dosage/Application: 1-2 drops 2 times daily.

Use 2: Medicament for conjunctivitis.

Preparation: The stem is cut and the water from the cut end dropped into the eyes as treatment for conjunctivitis.

Dosage / Application: 1-2 drops are applied 3 times daily.

Collection voucher: Tiwari 1522, 1537.

Ray and Majumdar (1976) reported antibacterial effects using root extracts of *Acacia catechu*. Almagouri *et al.* (1985) reported antibacterial effects using extracts of *Acacia mellifera*. Sterols and /or triterpenes are the principal compounds in the extract.

Ethanollic extracts of *Acacia angustissima* inhibit growth of *Klebsiella pneumoniae*, *Bacillus subtilis*, *Staphylococcus aureus* and *Candida albicans* (Hoffmann *et al.*., 1993).

Chhabra and Uiso (1991) reported antimicrobial activity using methanolic extracts of *Acacia xanthopholea* against *Pseudomonas aeruginosa*, *Escherichia coli*, *Neisseria gonorrhoeae*, *Salmonella oranienburg* and *Shigella boydii*. Banerji and Nigam (1980) reported spermicidal activity in tests with human semen using the saponins from bark extracts of *Acacia concinna* and *A. caesia*. Lupeol, stigmasterol and alpha-spinasterol were found in the bark extract of *A. caesia* and lupeol, alpha-spinasterol, hexacosanol, a-spinasterone, acacic acid lactone and an amorphous saponin were found in *A. concinna*.

Botanical name: *Calliandra* sp.

Common name: none.

Tree 4-5 m high along bank of river; inflorescence racemose; flowers white and dark pink.

Use: Charm.

Preparation: The bark is boiled with water and used for breaking the "evil-eye" spells.

The decoction is drunk until satiated, then vomited out so the spell is broken. At the same time, the perpetrator of the "evil-eye" will die. According to Dominique Williams, one such death had occurred at Kamana village.

Collection voucher: Tiwari 1579.

Botanical name: *Pentaclethra macroloba* (Willd.) Kuntze

Common name: a-war-i-gaik-yik (Patamona).

Tree 7-8 m high; fruit a woody, somewhat flat pod.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk for diarrhea.

Dosage / Application: 175 ml is taken 2 times daily.

Use 2: Anti-drooling.

Preparation: The inner bark is boiled with water and drunk as a treatment for jaundice.

Dosage / Application: 175 ml is taken 2 times daily for 5-7 days.

Use 3: Medicament for biliousness.

Preparation: The bark is boiled, and the water drunk as treatment for biliousness.

Dosage / Application: 175 ml is taken daily every morning for 5 days.

Collection voucher: Tiwari 1506.

Lupeol, one of the most widespread pentacyclic triterpenes is obtained from this plant. It is an antineoplastic agent. A derivative, $C_{32}H_{52}O_2$ possesses anti-ulcer properties. Lupeyl stearyl ether, paucine and 3-hexadecanoyl and saponins are obtained from *P. eetveldeana*. Penmacric acid and alkaloids are obtained from *P. macrophylla* (Buckingham, 1998; Hollerbach *et al.*, 1970). Sesquiterpenes are obtained from *P. epiphytica* (Bohlmann *et al.*, 1979).

Botanical name: *Pithecellobium laetum* Benth.

Common name: tu-cu-nang-yik (Patamona).

Tree 5-7 m high; trunk straight, diameter 10-12 cm; bark gray, 1-2 mm thick, odorless; wood white; wood sample taken.

Use 1: Anti-pruritic.

Preparation: The bark is scraped and rubbed on the skin as a medication for itching.

Use 2: Antiseptic for sores.

Preparation: The bark is mixed with water and used for washing sores.

Dosage / Application: It is applied 2 times daily.

Use 3: Medicament for chicken pox.

Preparation: The bark is mixed with water and used as a treatment for chicken pox.

Use 4: Medicament for measles.

Preparation: The bark is mixed with water and used for treatment of measles.

Collection voucher: Tiwari 1477B.

Family: Monimiaceae

Botanical name: *Siparuna guianensis* Aubl.

Common name: none.

Shrub 2-3 m high; fruit a berry.

Use 1: Anti-malarial.

Preparation: The bark is boiled, and the water drunk as treatment for malarial infection.

Dosage / Application: 350 ml is taken at least 2 times daily for 7-9 days.

Use 2: Anti-pyretic.

Preparation: The bark is boiled with water and drunk as a treatment for high fevers.

Dosage / Application: 175 ml is taken 2 times daily until the temperature is normal.

Use 3: Medicament for "bush yaws".

Preparation 1: The pulp of the fruit is applied to the affected area.

Preparation 2: The root is macerated and boiled, and the water used for washing the infection.

Dosage / Application: It is applied at least 2 times daily.

Collection voucher: Tiwari 1473A.

Chiu *et al.* (1982) reported the isolation of alkaloids, liriodenine and oxonantenine from methanolic extraction of the dried coarsely milled roots of another species, *Siparuna gilgiana*.

Family: Moraceae

Botanical name: *Brosimum guianense* (Aubl.) Hubel

Common name: e-mo-yik, pui-yik (Patamona).

Tree 6-8 m high; trunk straight with horizontal fissures, diameter 18-19 cm; bark greenish-gray, flaky; fruit a berry, small, green; wood hard, yellow.

Use 1: Analgesic.

Preparation: The bark is macerated, warmed, and used as a poultice to treat sores.

Dosage / Application: It is applied 2 times daily.

Use 2: Anti-asthmatic.

Preparation: The latex is drunk as treatment for asthma.

Dosage / Application: 8-10 ml is taken 3 times daily.

Use 3: Medicament for colds.

The latex is drunk to relieve colds, runny nose and other associated ailments.

Dosage / Application: 8-10 ml is taken 3 times daily.

Collection voucher: Tiwari 1405, 1473B.

Brosiprenin, 7-hydroxy-6-prenylcoumarin and xanthyletin are among the compounds isolated from *Brosimum* (Buckingham, 1998).

Botanical name: *Brosimum paraense* Taub.

Common name: pui-yik (Patamona).

Tree 10-11 m high, trunk straight; diameter 14-15 cm; fruit a berry.

Use 1: Medicament for colds.

Preparation: The latex is drunk as a treatment for colds.

Dosage / Application: 15 ml is taken 3 times daily.

Use 2: Medicament for coughing.

Preparation: The latex is drunk as a treatment for coughing.

Dosage / Application: 15 ml is taken 3 times daily.

Collection voucher: Tiwari 1524 (see 1405).

Family: Myristicaceae

Botanical name: *Virola sebifera* Aubl.

Common name: i-li-ga-wa-yik (Patamona).

Tree 10-11 m high; fruit a berry, brown.

Use 1: Charm.

Preparation: The bark is soaked overnight in water and drunk as a charm for hunting savanna deer, and birds such as the powis. It is also used the same way for breaking an evil spell.

Use 2: Emetic.

Preparation: Bark boiled with water and used to induce vomiting.

Dosage / Application: 350 ml is taken.

Collection voucher: Tiwari 1513.

Filho *et al.* (1980) isolated a novel spiro-derivative of a natural 1,3-diarylpropane

from the wood extract of *Iryanthera elliptica*, another genus in the family.

Family: Myrtaceae

Botanical name: *Eugenia puniceifolia* (H.B.K.) DC.

Common name: pea-kok-yik (Patamona).

Shrub less than 1m high in open savanna; bark with a pungent "medicinal" smell; fruit green.

Use: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk to treat diarrhea.

Dosage / Application: 350 ml is taken 3 times daily for 3-4 days.

Collection voucher: Tiwari 1469.

Akinrimisi and Akinwande (1976) reported water, saline and ethanolic extracts of another species, *Eugenia caryophyllus* inhibited brain acetylcholinesterase activity and that the inhibitor is a complex glycoside containing phenol and uronic acid partial structures.

Botanical name: *Eugenia* sp.

Common name: ta-bu-yah-chi-bu-yae-yik (Patamona).

Tree 13-14 m high, trunk straight, diameter 20-22 cm; bark reddish-brown, flaky, 1-2 mm thick with longitudinal fissures; fruit a berry, green; wood cream colored, straight-veined, hard.

Use 1: Anti-diarrheal.

Preparation: Young fruits are grated and the juice drunk to relieve diarrhea.

Dosage/Application: 15-30 ml is taken 2-3 times daily, depending on the severity of the infection.

Use 2: Anti-dysenteric.

Preparation: Young fruits are grated and the juice drunk to cure "bad-belly" or bloody dysentery.

Dosage/Application: 30 ml is taken 3 times daily.

Collection voucher: Tiwari 1414 (see 1469).

Botanical name: *Psidium guineense* Sw.

Common name: qua-pa-yik (Patamona).

Tree 4-5 m high; fruit green.

Use: Anti-diarrheal.

Preparation 1: The bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken 3 times daily.

Preparation 2: The leaves are also boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 350 ml is taken 3 times daily.

Collection voucher: Tiwari 1553.

Anesini and Perez (1993) reported the fruit pericarp hot water extracts of *Psidium guianense* to be very active against the growth of *Staphylococcus aureus*, *Escherichia coli* and *Asperilligus niger*.

Botanical name: *Syzygium cuminis* Gaertn.

Common name: none.

Tree 4-5 m high in savanna; flowers pale yellow; fruit a berry, green, turning black when mature.

Use: Beverage/tonic.

Preparation: The fruits are used for making a beverage/tonic and wine.

Collection voucher: Tiwari 1606.

The alcoholic extracts of *Syzygium cuminis* showed antibacterial and anti-fungal activity against human and plant pathogens (Hussain and Deeni, 1991).

Family: Papaveraceae

Botanical name: *Bocconia pearcei* Hutch.

Common name: ah-key-ya-mu-yik (Patamona).

Tree 3-4 m high; leaves large, lobed; fruit a capsule, furrowed, green; fruit separate.

Use: Anti-fungal.

Preparation: The bark is boiled, and the water used as treatment for athlete's foot.

Collection voucher: Tiwari 1587.

Family: Passifloraceae

Botanical name: *Passiflora glandulosa* Cav.

Common name: ka-wuk raie-yik (Patamona).

Vine alongside trail in the forest; flowers red.

Use: Emollient.

Preparation: The leaves are used as a poultice for sores, cut and bruises.

Collection voucher: Tiwari 1612.

Aoyagi *et al* . (1974) reported the isolation of maltol and ethyl maltol from *Passiflora incarnata* extracts. Maltol effected a depressant activity in mice, inhibits pentylenetetrazole-induced convulsions, inhibits spontaneous motor activity and antagonized the stimulant action of barmala alkaloids in hexobarbital induced sleep. Ethyl maltol is a more potent anticonvulsant, has less effect on spontaneous motor activity and inhibits respiration in vitro. An ointment containing extracts of *Ruscus aculeatus*, *Salvia officinalis* and *Passiflora incarnata* which synergistically increased capillary resistance in rats was patented by Aubert and Philippe (1983). Glotzbach and Rimpler (1968) reported the presence of flavonoids in the methanolic extracts of *Passiflora incarnata*, *Passiflora quadrangularis* and *Passiflora pulchella*. Among the C-glycosides are saponarin, saponaretin, vitexin, and homoorientin which was not found in *Passiflora quadrangularis*.

Botanical name: *Passiflora vespertilio* L.

Common name: ka-wuk-wa-raie-yik (Patamona).

Vine in canopy of forest; flowers greenish-yellow; fruit black.

Use: Anti-inflammatory.

Preparation: The leaves are warmed and tied over hard boils to bring them to a point so

that the pus can be easily squeezed out.

Collection voucher: Tiwari 1608 (see 1612).

Family: Piperaceae

Botanical name: *Piper aduncum* L.

Common name: wer-ui-qui-yik (Patamona).

Shrub 3-4 m high in forest along creek; stem nodose; inflorescence spicate, 25-30 cm long, cream; fruit green.

Use: Medicament for sores.

Preparation: Leaves and stems are macerated and tied around sores as a poultice.

Collection voucher: Tiwari 1502.

The petroleum ether extract of leaves of *Piper aduncum* produces stigmasterol, piperitone, methyl-2, 2-dimethyl-2H-chromene-6-carboxylate, methyl-3(2-hydroxy-3-methyl-3-butenyl)-4-hydroxy-benzoate, methyl(6S)-2-trans-6-hydroxy-2, 6-dimethyl-2, 7-octadienoate. The chromene and the benzoic acid derivatives exhibited antibacterial (*Bacillus subtilis*, *Micrococcus luteus*, *Escherichia coli*), anti-fungal (*Penicillium oxalicum*) and molluscicidal (*Biomphalaria glabrata*) activities (Oriola *et al*, 1993). 4, 5-dimethoxy-2, 3-(methylenedioxy)-1 allylbenzene and their derivatives of piperine, isolated from *Piper hispidum* and *Piper aduncum* demonstrated strong anti-microbial and anti-fungal activities (Nair and Burke, 1990). Piperine from fruit extracts of *Piper nigrum* is reported to be used for treating epilepsy (Piegen, 1983). Extracts from the

dried fruits of *Piper longum* is reported to show anti-allergic activity and also used to treat asthma in children (Dahankur and Karandikar, 1984; Dahankur *et al.*, 1983). The leaves of another species, *Piper sarmentosum* yielded a class of compounds called phenylpropanoids. Anti-microbial activity against *Escherichia coli* and *Bacillus subtilis* was obtained when assayed with 1-allyl-2, 6-dimethoxy-3, 4-methylene dioxybenzene, a phenylpropanoid (Masuda *et al.*, 1991).

Botanical name: *Piper arboreum* Aubl.

Common name: ya-ka-mi-you-yik (Patamona).

Shrub 2-3 m high; stem nodose; inflorescence robust, spicate, 4-5mm long, green; fruit green.

Use: Anti-venom.

Preparation: The leaves and stems are macerated and used as a poultice for treating snake bite.

Collection voucher: Tiwari 1503 (see 1502).

Botanical name: *Piper hostmannianum* (Miq.) C. DC.

Common name: we-ru-e-qu-yik (Patamona).

Shrub 3 m high; stem nodose; inflorescence spicate; fruits yellowish-green.

Use: Anti-venom.

Preparation: The leaves and stem are ground, and the extract is applied to the affected area.

Collection voucher: Tiwari 1499 (see 1502).

Botanical name: *Piper peltatum* L.

Common name: wha-youw-yik (Patamona).

Shrub 2-3 m high in forest; leaves orbicular; inflorescence a spike; fruit tiny.

Use: Charm.

This is considered a bad plant among the community; whoever touches this plant brings bad luck upon himself. He may sprain an ankle, break a foot, or otherwise injure himself.

Collection voucher: Tiwari 1543 (see 1502).

Botanical name: *Piper* sp.

Common name: wha-youw-yik (Patamona).

Shrub 2-3 m high; stem nodose; inflorescence a spike; flowers minute; fruit minute, green.

Use: Charm.

This is considered a bad plant among the community; whoever touches this plant brings bad luck upon himself.

He may sprain an ankle, break a foot or otherwise injure himself.

Collection voucher: Tiwari 1549 (see 1502).

Family: Poaceae

Botanical name: *Axonopus anceps* (Mez) Hitch., s. l.

Common name: pam-poui-thou-yik (Patamona).

Grass in savanna; spreading.

Use 1: Anti-conjunctivitis.

Preparation: Juice is squeezed into the eyes to cure red eyes.

Dosage / Application: 1-2 drops is applied 3 times daily.

Use 2: Anti-inflammatory.

Preparation: The leaves are macerated and the juice is squeezed into the eyes.

Dosage / Application: 1-2 drops is It is applied 3 times daily.

Collection voucher: Tiwari 1599.

Botanical name: *Olyra micrantha* H.B.K.

Common name: rue-aa-yik (Patamona).

Grass about 1 m high in forest; inflorescence cymose; fruit black.

Use: Anti-microbial.

Preparation: The dry leaves are mashed and applied to the umbilical cord of babies after it is cut to prevent infection.

Collection voucher: Tiwari 1480.

Botanical name: *Panicum rudgei* Roth. ex Roem. & Schultes

Common name: ah-tu-ku-mae-le-yik (Patamona).

Grass growing on white sand in forest.

Use 1: Anti-pyretic.

Preparation: The stolon is boiled with water and drunk as a treatment for colds, fevers

and influenza.

Dosage / Application: 175 ml is taken 3 times daily.

Use 2: Medicament for colds.

Preparation: The stolon is chewed to relieve cold symptoms.

Collection voucher: Tiwari 1605.

Family: Proteaceae

Botanical name: *Panopsis* sp.

Common name: kha-puk-yeah-lea-yik (Patamona).

Tree 6-8 m high; trunk straight, diameter 20-23 cm; bark reddish-brown, 2-4 mm thick, with a rancid odor; wood hard.

Use: Medicament for chicken pox.

Preparation: The inner bark is mixed with the inner bark of kha-la-pau-rai-yik in hot water, and used for washing the skin as a treatment for chicken pox.

Dosage / Application: This is done at least 2 times daily.

Collection voucher: Tiwari 1563.

Family: Cyatheaceae

Botanical name: *Cyathea procera* (Willd.) Domin

Common name: arou-ta-yaouw-ku-yik (Patamona).

Fern about 1 m high; branch spiny.

Use 1: Anti-asthmatic.

Preparation: The whole plant is boiled, and the water drunk as a treatment for asthma.

Dosage / Application: 350 ml is taken 3 times daily.

Use 2: Anti-tuberculosis.

Preparation: The whole plant is boiled, and the water drunk to treat tuberculosis.

Dosage / Application: 350 ml is taken 3 times daily.

Collection voucher: Tiwari 1588.

17-hydroxy-29-hopanoic acid, orientin, vitexin, 9(11)-farnene, 4(23)-filicen-3-ol, 3-filicen-2-one, 20(22)-hopanediol and populinin and its 6"-*O*-succinoyl derivative are obtained from various species of *Cyathea*. Populinin is an anti-inflammatory agent (Buckingham, 1998).

Family: Dennstaedtiaceae

Botanical name: *Pteridium aquilinum* L.

Common name: kung-waik-yik (Patamona).

Straggling fern; sori arranged on underside of fronds in two rows.

Use: Poison.

The spines of this fern are poisonous, giving what is considered a "life-sore", which takes a very long time to heal.

Collection voucher: Tiwari 1457.

San Francisco and Cooper-Driver (1984) reported the presence of phenolic acids in *Pteridium aquilinum*, when assayed *in vitro* demonstrated antimicrobial activity

against several plant pathogenic bacteria and fungi.

Family: Rubiaceae

Botanical name: *Cinchona* sp.

Common name: none.

Mid-canopy tree, 6-7 m high, fruit a capsule, splitting from below towards the apex.

Use: Medicament for sores.

Preparation: The bark is macerated, warmed, and used as a poultice for sores.

Collection voucher: Tiwari 1525.

Ray and Majumdar (1976) reported antibacterial effects using stem-bark extracts of *Cinchona calisaya*.

Botanical name: *Coussarea* cf. *paniculata* Vahl

Common name: mik-yik (Patamona).

Tree 5-7 m high; trunk straight, bulbous, diameter 10 cm; bark gray-green, 2-3 mm thick with longitudinal striations and raised lenticels; flowers white; wood cream colored, Smooth.

Use 1: Medicament for "bush yaws".

Preparation: The inner bark is scraped, and the juice is applied onto persistent sores.

Dosage / Application: It is applied as often as possible.

Use 2: Medicament for eczema / dermatosis

Preparation: Juice from the bark is warmed and used for treating eczema.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for sores.

Preparation: The inner bark is scraped, warmed and tied around sores as a poultice.

Collection voucher: Tiwari 1439.

Botanical name: *Genipa spruceana* Steyerm.

Common name: kha-ruk-yik (Patamona).

Tree 6-7 m high; trunk straight, diameter 18-21 cm; fruit a berry, greenish-gray, separate.

Use: Anti-fungal.

Preparation: The fruit is used for treatment of ringworm. It is cut and vigorously rubbed onto the affected area. The results are excellent.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 1586.

Genipic acid and genipinic acid from the fruit extract of another species, *Genipa americana*, reportedly shows antibiotic properties (Buckingham, 1998).

Botanical name: *Palicourea guianensis* Aubl.

Common name: wey-lu-wey-yik (Patamona).

Shrub 3-4 m high in forest; leaves glaucous green; sterile.

Use: The leaves are used as bedding for children who wet their beds. It is believed that using the leaves of this plant will stop this bad habit.

Collection voucher: Tiwari 1580.

Botanical name: *Palicourea rigida* H.B.K.

Common name: ta-ra-ta-ra-yik (Patamona).

Shrub less than 1 m high in open savanna; inflorescence terminal; flowers yellow.

Use: Anti-menorrhagic.

Preparation: The bark is boiled, and the water drunk to stop excessive bleeding during the menstrual period.

Dosage / Application: 350 ml is taken every morning over the period of the cycle.

Collection voucher: Tiwari 1604.

Family: Rutaceae

Botanical name: *Xanthoxylum* cf. *rhoifolium* Lam.

Common name: a-chi-qua-rai-yik (Patamona).

Tree 4-5 m high; trunk spiny; leaves with serrated margins.

Use: Anti-malarial.

Preparation: The inner bark is boiled, and the water drunk for malaria.

Dosage / Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1583.

Grand (1989) reported the presence of pharmacologically active substances from *Zanthoxylum leprieurii*.

Family: Sapindaceae

Botanical name: *Paullinia latifolia* Benth. ex Radlk.

Common name: kik-ka-wa-na-yik (Patamona).

Woody liana; leaves trifoliate; wood furrowed; tendrils attached to leaf pedicels; sterile; wood sample taken.

Use: Fish Poison.

The liana is pounded, soaked, and repeatedly added to the water in canals, creeks, small rivers and streams to poison the water for fishing.

Collection voucher: Tiwari 1492.

Botanical name: *Toulicia guianensis* Aubl.

Common name: ha-ko-lu-ka-yik (Patamona).

Shrub 3-4 m high; bark with white latex; fruit brown.

Use 1: Anti-diarrheal.

Preparation: The bark and root is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 175-350 ml is taken daily, indefinitely.

Use 2: Anti-malarial.

Preparation: The bark is boiled with water and drunk as a treatment for malarial infection.

Dosage / Application: 350 ml is taken daily for 7-8 days.

Use 3: Medicament for chicken pox.

Preparation: The latex from the bark is applied to the skin as a treatment for chicken pox.

Dosage / Application: It is applied at least 2-3 times daily.

Use 4: Medicament for measles.

Preparation: The latex from the bark is applied to the skin as a treatment for measles.

Dosage / Application: It is applied at least 2-3 times daily.

This treatment is most effective.

Collection voucher: Tiwari 1493.

Family: Sapotaceae

Botanical name: *Chrysophyllum* cf. *auratum* Miq.

Common name: wa-ta-mo-yik (Patamona).

Tree 6-7 m high, trunk straight, diameter 20-22 cm; bark reddish-brown, 1-2 mm thick, with slight white latex and longitudinal fissures; fruit a berry, green; wood cream-yellow, straight-veined.

Use: Medicament for sores.

Dosage / Application: The bark is heated and tied around sores on the skin as a poultice.

Collection voucher: Tiwari 1411, 1422.

Leaves and stem contains beta-amyrin acetate, gentisic acid and alkaloids. Fruits are rich in ascorbic acids and the latex contains polyisoprenes. Methanolic extracts of the seeds and roots showed anti-histamine activity. The dry seed extract exhibited molluscicidal activity against schistosomiasis-transmitting snails (Iwu, 1993).

Botanical name: *Eremoluma sagotiana* Baill.

Common name: wa-ta-moui-yik (Patamona).

Tree 12-13 m high, trunk straight, diameter 14-16 cm; bark gray, flaky, smooth, flaky, 1-2 mm thick with a somewhat fragrant odor; fruit a berry; wood reddish-cream; straight-veined.

Use: Medicament for sores.

Preparation: The inner bark is scraped, warmed, and tied around sores.

Dosage/Application: It is used as required.

Collection voucher: Tiwari 1446.

Botanical name: *Pouteria venosa* (Mart.) Aubr.

Common name: ka-ma-gu-za-yik (Patamona).

Tree 15-16 m high; trunk straight, diameter 20-22 cm; bark brown; fruit a berry, brown.

Use 1: Analgesic for pain in the chest and heart.

Preparation: The seeds is chewed or grated, placed in cold water, and drunk as a pain reliever.

Dosage / Application: 80-175 ml is taken 2 times daily.

Use 2: Anti-diarrheal.

Preparation 1: The fruits are grated, boiled with water and drunk as a treatment for diarrhea.

Preparation 2: The bark is boiled with water and drunk as a treatment for diarrhea.

Dosage / Application: 175 ml is taken 2 times daily before meals.

Use 4: Medicament for fluttering of the heart.

Preparation: The seeds are chewed to prevent fluttering of the heart. It is also grated, placed in cold water, and drunk for the same purpose.

Dosage / Application: 80-175 ml is taken daily.

Use 5: Medicament for heart burn.

Preparation: The seeds are grated, soaked in water overnight and drunk as treatment for heart burn.

Dosage / Application: 175 ml is taken daily for 5-7 days.

Collection voucher: Tiwari 1559.

Staphylococcus aureus and *Bacillus subtilis* growth was inhibited by *Pouteria lucuma* cotyledon ethyl acetate extracts (Lazo, 1990).

Family: Smilacaceae

Botanical name: *Smilax latipes* Gleason

Common name: put-a-lu-mu-yik (Patamona).

Liana in canopy of tree; flowers yellowish-green; fruit a berry, green turning orange.

Use 1: Analgesic for back pain.

Preparation: The vine is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 175-350 ml is taken daily indefinitely.

Use 2: Medicament for back pain.

Preparation: The vine is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 175-350 ml is taken daily indefinitely.

Collection voucher: Tiwari 1609.

Caceres *et al.* (1990) reported antibacterial activity in vitro studies against enteropathogenic *Escherichia coli*, *Salmonella enteritidis*, *Salmonella typhi*, *Shigella dysenteriae* and *Shigella flexneri* using extracts of *Smilax lundelli*.

Botanical name: *Smilax syphilitica* Willd.

Common name: spo-ta-yik (Patamona).

Woody liana in canopy of forest; flowers greenish; fruit a berry, red.

Use 1: Analgesic for back pain.

Preparation: The vine is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 175-350 ml is taken daily indefinitely.

Use 2: Medicament for back pain.

Preparation: The vine is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 175-350 ml is taken daily indefinitely.

Collection voucher: Tiwari 1475B (see 1609).

Family: Solanaceae

Botanical name: *Capsicum* sp.

Common name: pui-maui-yik (Patamona).

Shrub 1 m high in savanna; flowers yellowish-green.

Use 1: Medicament for "bush yaws".

Preparation: The fruit is made into a poultice and tied around persistent sores for healing.

Use 2: Spice.

The fruit is used for flavoring food.

Collection voucher: Tiwari 1602.

Compounds found in this species include capsaicin, capsanthin, capsianoside A, capsochrome, capsorubin and cucurbitaxanthin (Buckingham, 1998).

Botanical name: *Physalis cf. pubescens* L.

Common name: tu-kuik-nang-yik (Patamona).

Shrub 1 m high in open patch of forest; fruit a berry, green.

Use: This plant is used to soothe babies when they are irritable. The plant is burned and the baby is held over the smoke. This will calm him or her down.

Collection voucher: Tiwari 1593.

Botanical name: *Solanum crinitum* Lam.

Common name: ku-ya-wik-yik (Patamona).

Shrub less than 1m high with spines; flowers mauve; fruit a berry, green.

Use 1: Medicament for "bush yaws".

Preparation 1: The fruits and leaves are boiled, and the water used for treating persistent and non-persistent sores.

Dosage / Application: This is done 2-3 times daily, indefinitely.

Preparation 2: The fruit is cut and the pulp is also used for treating persistent sores.

Dosage / Application: This is done as often as possible.

Use 2: Medicament for sores.

Preparation: The fruits and leaves are boiled, and the water used for treating sores.

Dosage / Application: It is applied 2-3 times daily, indefinitely.

Collection voucher: Tiwari 1472.

Antibacterial and anti-fungal activities were demonstrated using the flavonoid-rich extracts of another species, *Solanum melongena* against several pathogens including *Aspergillus flavus* and *Candida albicans* (Barnabas and Nagaranjan, 1988). Caceres *et al.* (1991, 1993a, 1993b) reported antibacterial activity in *in vitro* studies against bacteria (*Staphylococcus aureus*, *Streptococcus pneumoniae*, *Streptococcus pyogenes*) which causes respiratory infections using alcoholic extracts from *Solanum nigrescens*, *Lippia alba* and *Lippia dulcis*. Wietschel *et al.* (1980) reported the quercetin derivatives are the predominating glycosides in studies of the flavonoid patterns in leaf extracts of tuber-bearing *Solanum* species. Also reported are kaempferol, isorhamnetin and myricetin glycosides. Berman (1985) patented an ointment containing an herbal extracts of *Rosmarinus officinalis*, *Hypericum perforatum*, *Hedera helix*, *Capsicum minimum*, *Cucumis sativa*, *Fucus crispus*, *Hamamelis virginiana*, *Ulmaria*, *Aesculus hippocastanum* and *Salvia officinalis* among other things. The ointment can be used to treat varicose

veins, hemorrhoids, eczema, psoriasis and skin infections. Seelkopf (1968) reported three alkaloid glycosides in the fruit extracts of *Solanum mammosum*. Solasodine is the aglycon. Also reported is the presence of sapogenins.

Botanical name: *Solanum macranthum* Dunal

Common name: pa-ru-mak-yik (Patamona).

Shrub less than 1 m high; leaves lobed; flowers pale cream; fruit a berry.

Use 1: Antiseptic.

Preparation: The roots are boiled, and the water used as a mouthwash.

Use 2: Medicament for toothache.

Preparation: The roots are boiled, and the water used for treating toothache.

Collection voucher: Tiwari 1547 (see 1473).

The alkaloids liriodenine and oxonanterine are obtained from the root extract of *S. gilgiana* (Chiu *et al.*, 1982).

Botanical name: *Solanum subinerme* Jacq.

Common name: ka-ta-lo-na-yik (Patamona).

Shrub about 2 m high in open savanna; leaves lobed, spinose and covered with hairs; fruit a berry, green turning yellow when ripe.

Use 1: Herbal bath for fevers.

Preparation: The fruits are macerated, mixed with water and used as herbal bath to relieve high fevers.

Dosage / Application: This is done at least 2 times daily.

Use 2: Medicament for "bush yaws".

Preparation: Fruits are used for treating persistent sores. It is cut in half and vigorously rubbed on the infected area.

Dosage / Application: It is applied indefinitely.

Collection voucher: Tiwari 1576 (see 1473).

Family: Theaceae

Botanical name: *Ternstroemia punctata* (Aubl.) Sw.

Common name: none.

Shrub 3-4 m high; leaves whorled; flowers pale pink.

Use: Medicament for sores.

Preparation: The bark is warmed and tied around affected areas of the skin or body as a poultice for sores.

Collection voucher: Tiwari 1476C.

Family: Tiliaceae

Botanical name: *Apeiba echinata* Gaertn.

Common name: wha-naw-rai-yik (Patamona).

Tree 4-5 m high; trunk straight, diameter 10-12 cm; bark gray, 1-2 mm thick, with a pungent odor.

Use 1: Analgesic.

Preparation: The ash from the burnt wood is also used for filling cavities to relieve toothache.

Use 2: Toothpaste.

Preparation: The ash from the burnt wood is used as toothpaste to prevent cavities..

Collection voucher: Tiwari 1568.

Botanical name: *Corchorus hirtus* L.

Common name: ka-le-cho-pule-yik (Patamona).

Shrub 1-2 m high; leaves alternate with serrated margin and having a somewhat velvety touch or feel, mid-vein is elevated and tertiary veins are parallel.

Use: Insecticide.

Preparation: The leaves are pounded, mixed with water, and used for washing the head to get rid of lice.

Dosage / Application: Several washings are required.

Collection voucher: Tiwari 1575.

Quercetin and kaempferol, flavonoids extracted from leaves and flowers of *Corchorus depressus* demonstrated anti-microbial activity against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. Quercetin showed no activity against *Candida albicans* (Harsh and Nag, 1988).

Family: Verbenaceae

Botanical name: *Clerodendron cf. thompsonae* Balf.

Common name: ku-mae-yik (Patamona)

Shrub 2-3 m high; sterile.

Use: Shampoo.

Preparation: The leaves are macerated and used as a shampoo to prevent scaling of the scalp, and to get rid of dandruff.

Dosage / Application: It is used as often as possible.

Collection voucher: Tiwari 1566.

Botanical name: *Lantana camara* L.

Common name: kya-wou-goui-ma-yik (Patamona).

Herb about 1m high in savanna; flowers red.

Use 1: Medicament for "bush yaws".

Preparation: The leaves are macerated, boiled with water and used for treating persistent sores.

Dosage / Application: It is applied 1-2 times daily.

Use 2: Medicament for sores.

Preparation: The leaves are macerated, boiled, and the water used to treat sores.

Dosage / Application: It is applied to the sore as often as possible.

Collection voucher: Tiwari 1471.

Verpoorte and Dihal (1987) reported antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Aspergillus niger*,

and *Candida albicans* using extract from *Lantana camara*. Camaroside, dihydroehmannic acid, lantadene A, B, C and D, diodantunezone, benulin, lantanilic acid, lantanolic acid, camarilic acid, camaric acid, lantic acid, lantoic acid, camaracinic acid, camarinic acid and camaraside are compounds from *L. camara* (Buckingham, 1998). The compound, umuhengerin (5-hydroxy-6, 7, 3', 4', 5'-pentamethoxyflavone), isolated from dried leaves of another species *Lantana trifolia* demonstrated significant antibacterial and anti-fungal activities against several human pathogens (Rwangabo *et al.*, 1988).

Chapter 3

Medicinal Plants of Kato

Kato, a savanna-type village located at 4 ° 42' N and 59 ° 50' W in the Potaro-Siparuni Region was surveyed. Seventeen individuals were interviewed, independently of each other. Sixty-five families representing 41.14% of the families in the flora of the Region, 106 genera representing 13.49% of the genera in the Region, and 136 species representing 7.55% of the species in the flora of the Region were used for medicinal purposes. Eighty-six medicinal use categories were recorded. Twenty-eight species are used as anti-diarrheals; 24 species are anti-pyretic; 18 species used to treat itching; 13 species are used as anti-malarial plants; 13 species are used for treating fungal infections; 12 species are used for treating dysentery; and 8 species are used for treating back pain. One species is used as an anti-menorrhagic agent. The plant part, method of preparation and dosage / application are described below. Appendix 6 gave details of medicinal use categories and the percent species in each family used for medicinal purposes at Kato.

Family: Agavaceae

Botanical name: *Furcraea foetida* (L.) Haw.

Common name: ka - ro - whak - yik (Patamona).

Shrub about 1m high with rosette leaves, 1-2m long, very thick; inflorescence 5-7m long; fruit green.

Use 1: Fish poison.

Preparation: The leaves are used as a fish poison in the savanna area.

Dosage/Application: Leaves are ground and added to the water, thereby stunning fishes, which ultimately float to the surface and are easily caught.

Use 2: Shampoo.

Preparation: The young leaves are macerated and used as a soap.

Dosage/Application: It is used as necessary.

Use 3: Soap.

Preparation: The young leaves are squashed and used as a soap.

Dosage/Application: It is used as necessary.

Collecting voucher: Tiwari 1787A + B.

Furcogenin is obtained from *F. selloa* (Buckingham, 1998).

Family: Alzateaceae

Botanical name: *Alzatea verticillata* Grah.

Common name: co - mey - yar - ray - yik (Patamona).

Shrub in open savanna; flowers off-white.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and used as an ointment for itching.

Dosage/Application: It is applied as necessary.

Use 2: Medicament for itchy scalp.

Preparation: The leaves are macerated, and used for treating itchy and scaly scalp.

Dosage/Application: It is applied 2 times daily.

Use 3: Medicament for venereal disease.

Preparation: The leaves are macerated, and used as an ointment for venereal disease.

Dosage/Application: It is applied 3-4 times daily.

Use 4: Shampoo.

Preparation: The leaves are macerated and used as shampoo.

Dosage/Application: It is used as necessary.

Collecting voucher: Tiwari 1722.

Family: Amaranthaceae

Botanical name: *Achryanthes aspera* L. var. *indica* L.

Common name: soldier's rod.

Herb less than 1 m high in savanna, inflorescence spicate; fruit green.

Use: Medicament for back pain.

Preparation: The leaves are boiled and the water drunk for back pain.

Dosage/Application: 350 ml is drunk as tea every morning.

Collection voucher: Tiwari 1829.

Achyranthine, an alkaloid from this plant, is used as a vasodilator, diuretic, purgative and as an anti-hypertensive agent. Inokosterone isolated from *A. fauriei* reportedly has shown hormonal activity in insects (Buckingham, 1998).

Botanical name: *Cyathula prostrata* Blume

Common name: none.

Herb less than 1m high; inflorescence spicate; flowers bluish-white.

Use 1: Anti-pyretic.

Preparation: The plant is boiled with water and used for treating high fevers.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Herbal bath.

Preparation: The plant is boiled with water and used for herbal baths.

Dosage/Application: Use as required.

Use 3: Soap.

Preparation/Application: The leaves are macerated and used as soap.

Collecting voucher: Tiwari 1729 (see 1617).

Family: Amaryllidaceae

Botanical name: *Crinum erubescens* Aiton

Common name: mou - doui - mou - ray - yik (Patamona).

Shrub on forest floor; flowers white.

Use 1: Anti-diarrheal.

Preparation: The gum is grated, mixed with water, and drunk as a treatment for diarrhea.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Antihelmintic.

Preparation: The leaves are boiled with water and drunk for intestinal worms.

Dosage/Application: 300 ml is taken 2 times daily.

Use 3: Medicament for abscesses.

Preparation/Application: The leaves are warmed and used as a poultice to bring abscesses to a point.

Use 4: Medicament for mumps.

Preparation/Application: The leaves are warmed and tied around swollen areas to ease swelling, such as from mumps.

Collecting voucher: Tiwari 1717, 1850.

Coranicine, criwelline, deacetylbowdensine, epicrinine, flexinine, hemanthine, and N-demethylcarboethoxymacronoine are among a very large group of alkaloids isolated from *Crinum erubescens* (Buckingham, 1998). 1, 2-(- epoxyambelline), an immunostimulant alkaloid, has been isolated from another species *C. latifolius* (Ghosal *et al.*, 1984).

Botanical name: *Crinum erubescens* Aiton

Common name: ma - ri - ba – yik (Patamona).

Use 1: Anti-arthritis.

Preparation: The root is grated, soaked in warm water, and tied around the knees and joints as a treatment for relieving the pain of arthritis.

Dosage / Application: This is done as often as possible.

Use 2: Anti-irritant.

Preparation: This plant is also rubbed on the skin of babies to calm them when they are Irritable.

Collecting voucher: Tiwari 1850 (see 1717).

Botanical name: *Hymenocallis tubiflora* Salisb.

Common name: none.

Shrub in savanna less than 1 m high.

Use: Medicament for hair growth.

Preparation: The leaves are stripped and used as a massaging agent on the head for hair growth.

Dosage/Application: Several leaves are macerated and used to massage the head.

Collection voucher: Tiwari 1832

Littoraline, $C_{18}H_{21}NO_5$, an alkaloid isolated from the bulbs of another species *H. littoralis* reportedly inhibits HIV reverse transcriptase activity. The (+)-variant form of $C_{14}H_{15}NO_8$, another alkaloid in *H. littoralis* possesses antineoplastic activities as well as activity against P-388 leukemia and M5076 sarcoma. The alkaloid, 7-deoxy-trans-dihydronarciclasine in several species of *Hymenocallis* exhibited cytotoxicity and effected activity against a range of RNA viruses. The alkaloid $C_{16}H_{19}NO_4$ shows good activity against Rauscher viral leukemia (Buckingham, 1998).

Family: Anacardiaceae

Botanical name: *Anacardium giganteum* Hancock

Common name: khu - youw - sey - you - yik (Patamona).

Tree 12-13 m high with a slightly bent trunk, diameter 10-12 cm; bark gray, 2-3 mm thick, flaky with longitudinal fissures; wood straight-veined, pale cream, hard.

Use: Anti-diarrheal.

Preparation: The bark is scraped, boiled, and the water drunk for diarrhea.

Dosage/Application: 350-700 ml is drunk daily for 3-5 days.

Collection voucher: Tiwari 1652.

Botanical name: *Anacardium occidentale* L.

Common name: youw - rouii - yik (Patamona).

Tree in savanna about 3-4 m high; flowers pinkish-white; fruit green, edible.

Use 1: Anti-diarrheal.

Preparation: The bark is scraped, soaked overnight in water and drunk for treating diarrhea.

The inner bark can also be boiled, the water allowed to cool, and drunk for treating diarrhea.

Dosage/Application: 175-350 ml is taken 1-2 times daily.

Use 2: Anti-fungal.

Preparation: The oil from the nut is used as an anti-fungal agent.

Dosage/Application: Apply as necessary.

Use 3: Antiseptic.

Preparation: Immature fruit is macerated and used for treating a baby's sore mouth.

Dosage/Application: It is applied 2-3 times daily.

Use 4: Medicament for cracked heels.

Preparation: The oil from the nut is also applied to cracked heels for healing.

Dosage/Application: It is applied as often as possible.

Use 5: Medicament for skin conditions.

Preparation/Application: The immature fruit is macerated and applied to rashes for healing, especially for young children.

Use 6: Shampoo.

Preparation/Application: The oil from the nut is used as a shampoo.

Collection voucher: Tiwari 1684, 1710.

Anacardic acids isolated from *Anacardium occidentale* demonstrated bactericidal activity against *Streptococcus mutans* (Muroi and Kubo, 1993).

Family: Annonaceae

Botanical name: *Annona muricata* L.

Common name: sour-sop.

Tree 3-4 m high; flowers cream-yellow, very fragrant.

Use: Anti-hypertensive.

Preparation: The leaves are boiled with the leaves of avocado and drink to lower the blood pressure.

Dosage/Application: 30 ml is taken daily for 5 days.

Use 2: Medicament for fluttering of the heart.

Preparation: The leaves are boiled with water and drunk as a medication for fluttering of the heart.

Dosage / Application: 150-300 ml is taken daily for 5-7 days.

Use 3: Tonic.

Preparation: The fruit is used for making a tonic.

Collecting voucher: Tiwari 1750, 1839.

Kaur-16-en-19-oic acid isolated from the fruits of *Annona reticulata* demonstrated antimicrobial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Mycobacterium smegmatis* and *Saccharomyces cerevisiae* (Oguntimein, 1987). Annoquinone-A, parietin and b-sitostenone are isolated from stem-bark extracts of *Annona montana*.

Annoquinone-A demonstrated potent antimicrobial activity against *Bacillus subtilis*, *Staphylococcus aureus* and *Micrococcus luteus*. Annoquinone-A and b-sitostenone demonstrated cytotoxic effects in KB tissue culture assay (Wu *et al.*, 1987).

Botanical name: *Duguetia pycnastera* Sandw.

Common name: ya - rai - you - rang - yik (black yari-yari) (Patamona).

Tree 4-5 m high in understorey of forest; bark gray-black with a somewhat fragrant smell; wood sample taken.

Use: Medicament for colds.

Preparation: The inner bark is scraped, allowed to stand in water for a day and drunk as a treatment for colds.

Dosage/Application: 350 ml is taken daily for 2-3 days.

Collecting voucher: Tiwari 1758.

Casagrande and Ferrari (1970) reported the three alkaloids, norglaucine, 9, 10-dimethoxy-7-hydroxy-1,2-methylenedioxyaporphine (duguetine) and an (-) enantiomer of dicentrine, isolated from a Brazilian *Duguetia* species.

Family: Apiaceae

Botanical name: *Eryngium foetidum* L.

Common name: ka - ri - cha - ya - ni - yik (Patamona).

Herb less than 1 m high in wet place in savanna; inflorescence spicate; flowers green.

Use 1: Anti-malarial.

Preparation: The whole plant is boiled and the water drunk as a treatment for malarial infection.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Anti-pyretic.

Preparation: The leaves are boiled and the water drunk as a treatment for fever.

Dosage/Application: 75-80 ml is taken 2 times daily.

Use 3: Flavoring agent.

Preparation: The leaves are used for flavouring food.

Dosage/Application: 2-4 leaves are macerated and used.

Use 4: Herbal bath.

Preparation: The whole plant is boiled and the water used for an herbal bath.

Dosage/Application: It is used as required.

Use 6: Medicament for chicken pox.

Preparation: The whole plant is boiled and the water used as medication for chicken pox.

Dosage/Application: It is applied externally to the skin 3 times daily.

Use 7: Medicament for colds.

Preparation: The leaves are boiled and the water drunk as a medication for colds.

Dosage/Application: 75-80 ml is taken daily for 5 days.

Use 8: Medicament for measles.

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for measles.

Dosage/Application: It is applied 3 times daily.

Collection voucher: Tiwari 1817, 1821.

Eryngium foetidum is known from the literature to have medicinal properties (Kuebal and Toker, 1988). Saponins from the leaves of another species, *Eryngium planum*, have shown significant antimicrobial activity against a wide range of pathogenic bacteria (Margineanu *et al.*, 1978). Unsaturated Xylic acid is isolated from *E. foetidum* (Buckingham, 1998).

Botanical name: *Pimpinella anisum* L.

Common name: anise seed.

Shrub less than 1 m high in savanna; flowers yellow.

Use 1: Medicament for stomach-ache.

Preparation: Flowers are boiled, the water allowed to cool, and drunk for treating stomach-ache.

Dosage/Application: 150 ml is taken 3-4 times daily.

Use 2: Medicament for wind (gas) pain.

Preparation: The dry seeds are boiled and the water drunk for wind (gas) pain. Could be taken either hot or cold.

Dosage/Application: 300 ml is taken as often as required.

Collection voucher: Tiwari 1828.

Family: Apocynaceae

Botanical name: *Aspidosperma oblongum* A. DC.

Common name: po - ray - gai - yik (Patamona).

Tree about 10-12 m high in forest, trunk 25-26 cm in diameter; leaves and twigs with free floating white latex; bark 2-3 mm thick, black.

Use 1: Anti-malarial.

Preparation: The bark is boiled with water, and drunk as a treatment for malarial infection.

Dosage/Application: 350 ml is taken 2 times daily.

Use 2: Medicament for cataracts.

Preparation: The latex is mixed with a little water and used as an eye wash for curing cataracts.

Dosage/Application: Use 3 times daily.

Use 3: Medicament for eye infections.

Preparation: The latex is mixed with a little water and used as eye drop.

Dosage/Application: 1-2 drops is applied 2 times daily.

Collecting voucher: Tiwari 1673, 1760 (see 1413).

Botanical name: *Himatanthus bracteatus* (A. DC.) Woods.

Common name: e - bou - gouii - yik (Patamona).

Tree 3-4 m high in open savanna with a thick white latex; flowers off-white.

Use 1: Anti-fungal.

Preparation: The white latex is used as an anti-fungal agent.

Dosage/Application: It is applied to the infected area 2 times daily.

Use 2: Anti-pruritic.

Preparation: The latex is applied to the skin to cure itching.

Dosage/Application: Apply as necessary.

Use 3: Medicament for sores.

Preparation/Application: The bark is macerated and used as a bandage for sores.

Use 4: Medicament for wounds.

Preparation/Application: Extract from the macerated inner bark is applied to cuts and wounds to stop bleeding.

Collection voucher: Tiwari 1688 (see 1470).

Botanical name: *Thevetia peruviana* (Per.) K. Schum.

Common name: khey - wa - ye - yik (Patamona).

Small tree 2-3 m high on hill in savanna; flowers yellow; fruit green.

Use: Medicament for sores.

Preparation: The bark is macerated and the juice used for treating sores.

Dosage/Application: It is applied 3 times daily to the affected area.

Collection voucher: Tiwari 1831.

Family: Araceae

Botanical name: *Anthurium crassinervium* (Jacq.) Schott

Common name: chim - mour - rou - goue - yik (Patamona).

Aroid on *Mora* tree; leaves glabrous, green above, paler below.

Use : Medicament for skin conditions.

Preparation: The macerated stem is used as a poultice.

Dosage/Application: Apply as necessary.

Collecting voucher: Tiwari 1747.

Hesperidin, a derivative from hesperetin and isolated from *Anthurium* sp., is an

anti-spasmodic agent with an LD₅₀ 1000 mg/kg (Buckingham, 1998).

Family: Arecaceae

Botanical name: *Desmoncus polyacanthus* Mart.

Common name: kam - o - wah (Patamona).

Spiny, climbing palm along trail in forest.

Use 1: Anti-pruritic.

Preparation: The roots are boiled and the water used for washing the skin as a treatment for itching.

Dosage/Application: It is used as necessary.

Use 2: Anti-pyretic.

Preparation: The roots are boiled and the water used for treating high fevers.

Dosage/Application: It is used as necessary.

Use 3: Herbal bath.

Preparation: The roots are boiled and the water used for herbal baths.

Dosage/Application: It is used as necessary.

Use 4: Medicament for chicken pox.

Preparation: The roots are boiled and the water used for treating chicken pox.

Dosage/Application: It is applied to the skin 3-4 times daily.

Use 5: Medicament for measles.

Preparation: The roots are boiled and the water used for treating measles.

Dosage/Application: It is applied to the skin 3–4 times daily.

Collecting voucher: Tiwari 1777.

Afzelechin is found in *D. polycanthus* (Buckingham, 1998).

Family: Aristolochiaceae

Botanical name: *Aristolochia hians* Willd.

Common name: pau - zu - ma - yik (Patamona).

Vine with a very pungent medicinal odor; flowers brown.

Use 1: Anti-pyretic.

Preparation: The plant is boiled and the water drunk as a treatment for fevers.

Dosage/Application: 150 ml is taken 3 times daily.

Use 2: Herbal bath.

Preparation: The leaves and stems are macerated, boiled, and used for herbal baths.

Dosage/Application: It is used as necessary.

Use 3: Medicament for colds.

Preparation: The plant is boiled and the water drunk as a treatment for colds.

Dosage/Application: 150 ml is taken 2 times daily.

Collecting voucher: Tiwari 1798 (see 1475A).

Family: Asteraceae

Botanical name: *Mikania micrantha* H.B.K.

Common name: wa - cow - yik (Patamona).

Climber with white flowers.

Use 1: Medicament for "bush-yaws".

Preparation: The leaves are macerated and the juice applied to persistent sores.

Dosage/Application: It is applied 2-3 times daily.

Use 2: Medicament for chicken pox.

Preparation: The leaves are macerated, boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage/Application: It is applied 2 times daily.

Use 3: Medicament for measles.

Preparation: The leaves are macerated, boiled, and the water used for washing the skin as a treatment for measles.

Dosage/Application: It is applied 2 times daily.

Use 4: Medicament for skin conditions.

Preparation: The leaves are macerated and vigorously rubbed on skin as treatment for rashes.

Dosage/Application: It is applied 3 times daily.

Collecting voucher: Tiwari 1766 (see 1552).

Botanical name: *Baccharis varians* Gardner

Common name: none.

Herb about 1 m high in savanna; leaves alternate; flowers axillary, cream-yellow, in

fascicles and in clustered heads.

Use: Insect repellent.

Preparation: The whole plant is used for smoking away insects, especially Kabowra flies

Dosage/Application: Leaves are burnt to produce large amounts of smoke.

Collecting voucher: Tiwari 1784.

3-O-Acetyltaxifolin, $C_{17}H_{14}O_8$ a derivative of taxifolin is obtained from this plant.

Taxifolin is used as an anti-inflammatory and antineoplastic agent (Buckingham, 1998)-

According to Buckingham (1998), there are over 250 chemical derivatives and variants from this plant.

Botanical name: *Bidens cynapiifolia* H.B.K.

Common name: wa - ra - ma - tang - yik (Patamona).

Shrub less than 1 m high; flowers yellow.

Use: Medicament for eye infection.

Preparation: The leaves are macerated and the juice used as an eye drop for treating infections of the eyes.

Dosage/Application: 1 drop is applied 2 times daily for 5 days.

Collecting voucher: Tiwari 1800.

Family: Bignoniaceae

Botanical name: *Jacaranda copaia* Aubl.

Common name: pa - si - yar - ray -yik (Patamona).

Tree 8-9 m high; trunk straight, diameter 10-12 cm; leaves compound; bark gray, 1-2 mm thick; wood off-white, straight-veined.

Use: Insect repellent.

Preparation/Application: Leaves and wood are used for making thick smoke used to chase away Kabowra flies.

Collecting voucher: Tiwari 1731.

Jacaranose and jacaric acid from *J. mimosaeifolia*;, jacaranone, jacoumaric acid, jacandanic acid from *J. caucana* and jacaranda acid from *J. chelonina* are among compounds obtained from *Jacaranda*. Jacaranone exhibited antineoplastic activity (Buckingham, 1998).

Family: Bixaceae

Botanical name: *Bixa orellana* L.

Common name: ah - non - da - yik (Patamona).

Tree 4-5 m high; fruit red.

Use 1: Charm.

Preparation/Application: The seeds are washed and boiled until the water gets viscous.

It is then strained, mixed with coconut oil and used to paint the skin, using cotton fibers as a brush. This is primarily used on young girls at the time when they have attained the age of puberty, to prevent "bad-eyes" or "evil-eyes".

Use 2: Dye.

Preparation: The seeds are used for painting the skin.

Dosage/Application: The seeds are washed and boiled until the water gets viscous. It is then strained, mixed with coconut oil and used to paint the skin, using cotton fibers as a brush.

Use 3: Flavouring agent

Preparation: The fruit is used for flavouring food.

Dosage/Application: The fruit is macerated and added to food.

Use 4: Medicament for skin conditions

Preparation: The seed is boiled, the water mixed with oil, and applied on the skin to heal sunburn or rashes caused by exposure to sun.

Dosage/Application: The mixture is used as an ointment and is applied as required.

Use 5: Skin lotion.

Preparation: The seed is boiled, the water mixed with oil, and applied on the skin as a lotion.

Dosage/Application: It is applied as necessary.

Collection voucher: Tiwari 1827.

Maslinic acid isolated from the leaves of *Bixa orellana* demonstrated antibacterial activity against *Bacillus subtilis* (Simpol *et al.*, 1989). (-)-Aromadendrene, isobixin, a compound $C_{15}H_{10}O_{10}S$ and luteolin 7-sulfate are some of the compounds isolated from *Bixa* (Buckingham, 1998).

Family: Boraginaceae

Botanical name: *Cordia nodosa* Lam.

Common name: tak - kou - ro - yik (Patamona).

Tree 3-4 m high in understorey of forest, covered with ants; stems and twigs hairy; fruit a berry.

Use: Anti-drooling.

Preparation: The fruits are given to babies to suck when they are dribbling.

Dosage/Application: Apply 2 times daily.

Collecting voucher: Tiwari 1751.

Cordiacuninones are extracted from the roots of *Cordia corymbosa*. The compounds, Cordiacuninones A and B demonstrated antibacterial activity against gram-positive bacteria and *Mycobacteria* (Bieber *et al.*, 1990).

Botanical name: *Cordia polycephala* (Lam.) Johnston

Common name: black sage.

Herb in savanna; flower off-white; fruit a green berry.

Use 1: Fish poison.

Preparation: The leaves are macerated and used as a fish poison.

Dosage/Application: Leaves are macerated in the hand and used hunt fish.

Use 2: Medicament for scrubbing teeth.

Preparation: The stem or wood are used for scrubbing the teeth.

Dosage/Application: It is macerated and used as a brush.

Collection voucher: Tiwari 1822 (see 1751).

Family: Burseraceae

Botanical name: *Protium sagotianum* March.

Common name: chi - pau - yik (Patamona).

Tree 8-10 m high with a forked, bulbous and bent trunk, diameter 15-17 cm; bark grayish-green, ringed with scattered lenticels, 2-3 mm thick, inner bark red with a pungent odor; wood straight-veined, yellow and somewhat hard; fruit green.

Use 1: Anti-ulcerogenic.

Preparation: The gum is ground, mixed with powdered greenheart seed, boiled with water, and drunk for stomach and liver ulcers.

Dosage/Application: 350 ml is taken 2 times a day for 3-5 days.

Use 2: Incense.

Wood is used as incense sticks.

Use 3: Medicament for purifying the blood.

Preparation: The bark is boiled, the water allowed to cool, and drunk as medication to "bitter" the blood (if a person suffers from itching, or certain other skin ailments, the blood is thought to be too sweet).

Dosage/Application: 150 - 300 ml is taken in the morning for 1-3 days.

Collection voucher: Tiwari 1648; 1650.

Botanical name: *Protium cf. sagotianum* March.

Common name: chi - bo - yik (Patamona).

Tree 5-6 m high in forest; bark highly scented; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as treatment for diarrhea.

Preparation: The gum is grated, mixed with water, and drunk as a treatment for diarrhea.

Dosage/Application: 175 ml is taken 2 times daily.

Use 2: Anti-ulcerogenic.

Preparation: The gum is ground, mixed with ground greenheart seed, boiled, and the water drunk for stomach ulcers.

Dosage/Application: 350 ml is taken 2 times daily for 3-5 days.

Use 3: Blood purifier.

Preparation: The bark is boiled and the water drunk as a tonic, to "bitter" the blood and for diarrhea.

Dosage/Application: 175 -350 ml is taken daily for 3 days.

Use 4: Incense.

Preparation: The wood is used as incense sticks.

Dosage/Application: 300 ml is taken 2 times daily.

Use 5: Medicament for cirrhosis.

Preparation: The gum is ground, mixed with ground greenheart seed, boiled, and the

water drunk for cirrhotic liver.

Dosage/Application: 175 ml is taken 2 times daily.

Collecting voucher: Tiwari 1716.

Family: **Caesalpiniaceae**

Botanical name: *Bauhinia guianensis* Aubl.

Common name: kah - wouii - eng - gou - ma - pouii - yik (Patamona).

Woody liana with bifoliolate leaves.

Use: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk for treating diarrhea.

Dosage/Application: 300 ml is taken 2 times daily.

Collecting voucher: Tiwari 1768.

Botanical name: *Bauhinia scala-simiae* Sandw.

Common name: kah - wouii - eng - gou - ma - pouii - yik (Patamona).

Woody climber in forest; stem flat and undulating.

Use: Anti-diarrheal.

Preparation: Stem is macerated, soaked overnight in water and drunk as a treatment for diarrhea.

Dosage/Application: 350 ml is taken 2 times daily.

Collecting voucher: Tiwari 1746.

Botanical name: *Cassia quinquangulata* L.C. Rich.

Common name: a - gai - mar - gai - yik (Patamona).

Small tree on bush island in savanna; flowers yellow; fruit a curved pod.

Use: Anti-venom.

Preparation: The trunk and stem is scraped, boiled, and the water used as a wash to cure snakebite.

Dosage/Application: This is used 3 times daily, for any type of snakebite.

Collecting voucher: Tiwari 1725.

The alcoholic extracts of *Cassia occidentalis* showed antibacterial and anti-fungal activity against human and plant pathogens (Hussain and Deeni, 1991).

Botanical name: *Hymenaea courbaril* L.

Common name: ma - sek - yik , ah - mui - le - yik (Patamona)

Tree 8-10 m high with undulating trunk; diameter 14-15 cm; bark grayish-brown, ringed with scattered lenticels, 2-3 mm thick; inner bark yellowish-orange with a sort of immature, unripe "cassa", putrid odor (like green *Melicoccus* seed); wood straight-veined, creamish-yellow, hard. Wood sample taken.

Use: Medicament for back pain.

Preparation: Bark and wood is boiled and the water drunk as treatment for back pain.

Dosage/Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1669, 1792 (see 1601).

Botanical name: *Mora excelsa* Benth.

Common name: tho - ro - yik (Patamona).

Tree about 20-24 m high in forest; trunk straight with a big buttress, diameter 30-35 cm; bark light gray; flowers creamish-white (too high to collect).

Use: Anti-diarrheal.

Preparation: The inner bark is scraped, soaked in water overnight, and drunk for curing diarrhea.

Dosage/Application: 150-300 ml is taken 2 times daily.

Collecting voucher: Tiwari 1745.

3-hydroxy-18-oleanen-28-oic acid (morolic acid) and 3-Oxo-18-oleanen-28-oic acid (moronic acid) are obtained this tree (Buckingham, 1998).

Family: Capparidaceae

Botanical name: *Capparis cf. maroniensis* Ben.

Common name: kha - rie - bung - yik (Patamona).

Tree 12-13 m high; trunk slightly bent, 12-13 cm diameter; bark gray, flaky with scattered lenticels, 2-3 mm thick; inner bark creamish with a putrid, stale odor; wood straight-veined, cream color.

Use: Paper material.

Preparation: The bark is stripped from the trunk and used as paper for rolling tobacco.

Collection voucher: Tiwari 1667.

Family: Caricaceae

Botanical name: *Carica papaya* L.

Common name: map - pa - ya - yik (Patamona).

Tree about 4-5 m high with white latex; flowers yellow; fruit green.

Use 1: Anti-hypertensive.

Preparation: The immature fruit is boiled and eaten as a medication for lowering the blood pressure.

Dosage/Application: One fruit is eaten daily for 2-3 days.

Use 2: Anti-malarial.

Preparation: The root is boiled with water and drunk as a treatment for malarial infection.

Dosage/Application: 300 ml is taken 2 times daily.

Collecting voucher: Tiwari 1794 (see 1546).

Family: Cecropiaceae

Botanical name: *Coussapoa asperifolia* Trecul ssp. *asperifolia*

Common name: ka - ma - ying - yik (Patamona).

Tree with hollow trunk, about 4-5 m high in weedy patch of forest; fruit spicate, in fascicles.

Use: Medicament for back pain.

Preparation: Sun-dried leaves are boiled with water and used for treating back pain.

Dosage/Application: 350 ml is taken 2 times daily.

Collecting voucher: Tiwari 1770.

Family: Chenopodiaceae

Botanical name: *Chenopodium ambrosioides* L.

Common name: tu - ra - ra - yik; matrush (Patamona).

Herb about 1 m high; flowers small, green.

Use 1: Anti-diarrheal.

Preparation: The whole plant is boiled and the water drunk as a treatment for diarrhea.

Dosage/Application: 300 ml is taken 2 times daily.

Use 2: Anti-pyretic.

Preparation: The whole plant is boiled and the water drunk as a treatment for fevers and influenza.

Dosage/Application: 300 ml is taken 2 times daily.

Use 3: Herbal bath.

The whole plant is boiled and the water used for an herbal bath.

Dosage/Application: It is used as necessary.

Use 4: Medicament for coughing.

Preparation: The whole plant is boiled and the water drunk as a medication for coughing.

Dosage/Application: 300 ml is taken 3 times daily.

Use 5: Tonic.

Preparation: The dried plant is boiled and used as a tonic.

Dosage/Application: 300 ml is taken daily.

Collection voucher: Tiwari 1809.

Quarles (1992) mentioned the uses of *Chenopodium* spp. as fungiscides, alleopathic effects, control of soil nematodes, the treatment of malarial infection and insecticidal effects. Saponins, flavonoids and limonene are among the constituents of *Chenopodium* extracts. The (-) form of pinocarvine is extracted from *Chenopodium ambrosioides*, and is a sex attractant for bark beetles. 3, 4, 5, 7-tetrahydroxyflavone, found in many plant families is used as anti-inflammatory agent, a diuretic and an anti-oxidant. (Buckingham, 1998).

Family: Chrysobalanaceae

Botanical name: *Licania heteromorpha* Benth.

Common name: wha - rha - mei - yik (Patamona).

Tree 8-9 m high with a straight trunk, diameter 10-11 cm; bark gray-brown with longitudinal striations, 3-4 mm thick, with red sap; wood pale yellow.

Use: Medicament for tuberculosis.

Preparation: The inner bark is boiled and the water drunk as a treatment for tuberculosis.

Dosage/Application: 150 - 300 mls are taken 2 times daily.

Collection voucher: Tiwari 1651.

Botanical name: *Licania* sp.

Common name: e - tha - nea - pu - lei - yik (Patamona).

Tree 15-17 m high, trunk slightly bent, diameter 24-25 cm; bark gray-brown, 5-6 mm thick, ringed, longitudinally fissured, with scattered lenticels and a faint fruity odor.

Wood straight veined, yellow-cream; fruit brown.

Use 1: Anti-asthmatic.

Preparation: The inner bark is scraped, boiled, and the water drunk as a treatment for asthma.

Dosage/Application: 350 ml is taken daily in the morning.

Use 2: Anti-tuberculosis.

Preparation: The inner bark is scraped, boiled, and the water drunk for tuberculosis.

Dosage/Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1676.

Family: Clusiaceae

Botanical name: *Clusia cuneata* Benth.

Common name: mang - yik (Patamona).

Small tree about 4-5 m high in savanna; fruit a capsule.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and used for treating dysentery.

Dosage/Application: 150 ml is taken 2 times daily for 1-2 days.

Use 2: Anti-dysenteric.

Preparation: The bark is boiled with water and used for treating dysentery.

Dosage/Application: 350 ml is taken daily for 1-2 days.

Collecting voucher: Tiwari 1703 (see 1462).

Botanical name: *Clusia fockeana* Miq.

Common name: mang - yik (Patamona).

Tree about 4-5 m high in savanna; fruit a capsule.

Use: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk for treatment of diarrhea.

Dosage/Application: 150-300 ml is taken 2-3 times a day depending on the severity of the diarrhea.

Collection voucher: Tiwari 1820 (see 1462).

Botanical name: *Clusia pana-panari* (Aubl.) Choisy

Common name: mang - yik (Patamona).

Tree 5-6 m high in forest; flowers pale pink; fruit a berry.

Use: Anti-dysenteric.

Preparation: The bark is scraped and boiled, the water is allowed to cool, and drunk for "bad-belly" (bloody dysentery).

Dosage/Application: 350 ml is taken 2 times daily.

Collecting voucher: Tiwari 1757 (see 1462).

Botanical name: *Clusia schomburgkiana* (Pl. & Tr.) Engl.

Common name: mang - yik (Patamona).

Tree about 3–4 m high in savanna; fruit a berry, cream color

Use1: Anti-diarrheal.

Preparation: The inner bark is boiled with water and drunk for diarrheal infection.

Dosage/Application: 150–175 ml is drunk 2–3 times daily.

Use 2: Anti-dysenteric.

Preparation: The inner bark is boiled with water and used for treating bloody dysentery.

Dosage/Application: 350 ml is drunk 3 times daily.

Collection voucher: Tiwari 1700 (see 1462).

Botanical name: *Vismia amazonica* Ewan

Common name: wai - ya - mak - yik (Patamona).

Small tree about 2–3 m high; flowers yellowish green; fruit a berry, green turning black.

Use 1: Anti-fungal.

Preparation: The orange-yellow sap from the tree is applied on the skin for treating ringworm.

Dosage/Application: It is used as often as possible.

Use 2: Medicament for eczema.

Preparation: The orange-yellow sap is used for treating eczema.

Dosage/Application: It is applied 3–4 times daily.

Collection voucher: Tiwari 1693.

Pasqua *et al.* (1995) reported the accumulation of Vismione A in regenerated plants of *Vismia guianensis* DC. Delle Monache *et al.* (1979) reported the isolation of Vismione A and B from the berries of another species *Vismia baccifera* var. *dealbata* H.B.K..

Botanical name: *Vismia angusta* Miq.

Common name: wa - ya - mak - yik (Patamona).

Tree 3-4 m high in weedy patch of the forest; bark with an orange red sap; flowers cream-yellow.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage/Application: 350 ml is taken 2 times daily.

Use 2: Anti-fungal.

Preparation: The latex is used as an anti-fungal agent for ringworm.

Dosage/Application: It is applied as necessary.

Use 3: Anti-pruritic.

Preparation: The latex is used as an ointment for itching.

Dosage/Application: It is applied 3 times daily.

Use 4: Medicament for scaling skin.

Preparation: The latex is used as an ointment for scaling.

Dosage/Application: It is applied 2 times daily.

Collecting voucher: Tiwari 1721 (see 1693).

Botanical name: *Vismia cayennensis* (Jacq.) Per.

Common name: wa - ya - mak - yik (Patamona).

Tree along trail in forest, 2-3 m high; flowers cream-yellow; fruit green, turning purple.

Use 1: Anti-fungal.

Preparation: The latex is used for treating fungal infections.

Dosage/Application: It is applied 2 times daily.

Use 2: Anti-pruritic.

Preparation: The latex is used as an ointment for treating itching.

Dosage/Application: It is applied 3 times daily.

Use 3: Medicament for scaling.

Preparation: The latex is used for treating scaling of the skin.

Dosage/Application: It is applied 2 times daily.

Collecting voucher: Tiwari 1728 (see 1721).

Family: Commelinaceae

Botanical name: *Dichorisandra hexandra* (Aubl.) Standl.

Common name: ou - rai - yah - yik (Patamona).

Shrub in weedy patch of forest; stems pink; flowers white.

Use: Anti-asthmatic.

Preparation: The leaves are boiled and the water drunk as treatment for asthma.

Dosage/Application: 150-300 ml is taken 2-3 times daily.

Collecting voucher: Tiwari 1776.

Family: Costaceae

Botanical name: *Costus erythrothyrus* Loes.

Common name: ah - mam - rah - yik (Patamona).

Shrub about 2 m high in moist area of forest; inflorescence red; flowers red.

Use 1: Anti-pyretic.

Preparation: The roots, stem and leaves are boiled and the water used for treating fevers.

Dosage/Application: 300 ml is taken 2 times daily for 7-9 days.

Use 2: Medicament for colds.

Preparation: The roots, stem and leaves are boiled and the water used for treating colds.

Dosage/Application: 350 ml is taken daily for 7-9 days.

Use 3: Medicament for coughing.

Preparation: The root, stem and leaves are boiled and the water used for treating coughs.

Dosage/Application: 350 ml is taken daily for 7-9 days.

Collecting voucher: Tiwari 1778 (see 1589).

Family: Crassulaceae

Botanical name: *Bryophyllum pinnatum* L.

Common name: pa - lea - rah - yik (Patamona).

Shrub less than 0.5 m high in savanna.

Use 1: Antibacterial.

Preparation: The leaves are macerated and the juice used as an antibacterial agent.

Dosage/Application: It is applied 3 times daily externally.

Use 2: Anti-fungal.

Preparation: The leaves are macerated and the juice used as an anti-fungal agent.

Dosage/Application: It is applied externally 3 times daily.

Use 3: Shampoo.

Preparation: The leaves are macerated, soaked in water, and used as shampoo.

Dosage/Application: It is used as required.

Collection voucher: Tiwari 1833.

Botanical name: *Bryophyllum pinnatum* L.

Common name: a - rak- kik – yik (Patamona).

Shrub in savanna.

Use 1: Antibacterial.

Preparation: The leaves are macerated and the juice used for treating bacterial infection.

Use 2: Anti-fungal.

Preparation 1: The leaf is roasted and used as a poultice for treating ringworm.

Preparation 2: Juice from the macerated leaves is also used for treating ringworm.

Collecting voucher: Tiwari 1848.

Family: Cucurbitaceae

Botanical name: *Momordica charantia* L.

Common name: carilla bush.

Climber with tendrils; flowers yellow; fruit green.

Use 1: Anti-diabetic.

Preparation: The leaves are boiled and the water drunk as a medication for diabetes.

Dosage/Application: 150 ml is taken daily for 1-2 weeks.

Use 2: Anti-diuretic.

Preparation: The leaves are boiled and the water used as an antidiuretic agent.

Dosage/Application: 75 ml is taken 2 times daily for 2 weeks.

Use 3: Anti-hypertensive.

Preparation: The leaves are boiled and the water drunk for lowering high blood pressure.

Dosage/Application: 150-300 ml is taken daily for 3-4 days.

Use 4: Blood purifier.

Preparation: The leaves are boiled and the water drunk to "bitter" the blood (to correct a presumed blood imbalance thought to be the cause of disease).

Dosage/Application: 75 ml is taken daily 7-9 days.

Collection voucher: Tiwari 1815 (see 1538).

Family: Cyperaceae

Botanical name: *Bulbostylis paradoxa* (Spreng.) Lindm.

Common name: wa - pi - a - pu - yik (Patamona).

Sedge about 10-15 cm high in open savanna; flowers small, cream-yellow.

Use 1: Anti-diarrheal.

Preparation: The stolon is boiled with water and given to babies to treat diarrheal infection.

Dosage/Application: 15-30 ml is drunk 2-3 times daily depending on the severity of the diarrhea.

Use 2: Medicament for bleeding.

Preparation: The stolon is boiled with water and drunk by women during and after childbirth to stop bleeding.

Dosage/Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1687, 1780.

Botanical name: *Rhynchospora barbata* (Vahl) Kunth.

Common name: sa - laa - yik (Patamona).

Shrub in savanna; flowers greenish-yellow.

Use: Medicament for migraine.

Preparation: The leaf blade is used to cut the inside of the nose to release pressure as a cure for migraine headaches.

Dosage/Application: It is applied as necessary.

Collection voucher: Tiwari 1818.

Botanical name: *Sclera arundinacea* Kunth

Common name: mi - gam - bra - ma - pui - yik (Patamona).

Sedge about 1-2 m high in open savanna; fruits small, brown.

Use 1: Anti-diarrheal.

Preparation: The whole plant is boiled, the water allowed to cool, and then drunk as a treatment for diarrhea.

Dosage/Application: 175-350 ml is drunk 1-2 times daily depending on the severity of infection.

Use 2: Anti-menorrhagic.

Preparation: Roots are stripped, grated, boiled, and the water allowed to cool, then drunk before meals in the morning during the menstrual cycle to alleviate excessive blood flow.

Dosage/Application: 350 ml is drunk daily depending on the duration of the cycle.

Collection voucher: Tiwari 1686.

Family: Dilleniaceae

Botanical name: *Curatella americana* L.

Common name: none.

Tree 3-4 m high in savanna; leaves very rough, sandpapery; fruit brown.

Use 1: Anti-ulcergenic.

Preparation: The bark is macerated, boiled, and the water drunk as treatment for stomach ulcers.

Dosage/Application: 175 ml is taken 2 times daily.

Use 2: Medicament for hepatitis.

Preparation: The bark is boiled with water and used for treating hepatitis.

Dosage/Application: 350 ml is taken daily for 6-8 days, preferably in the morning.

Use 3: Medicament for jaundice.

Preparation: The bark is macerated, boiled, and the water drunk to treat jaundice.

Dosage/Application: 75 ml is taken 2 times daily for 5 days.

Collecting voucher: Tiwari 1708.

Botanical name: *Davilla kunthii* A. St. Hil.

Common name: ka - ta - waik - yik (Patamona).

Woody liana along trail in forest; fruit a brown berry.

Use 1: Medicament for back pain.

Preparation: The dry leaves and stems are boiled and the water drunk as a treatment for back pain.

Dosage/Application: 300 ml is taken 2 times daily, indefinitely.

Use 2: Medicament for impotence.

Preparation: The dry leaves and stems are boiled and the water drunk as a treatment for impotence.

Dosage/Application: 300 ml is taken 3 times daily, indefinitely.

Use 3: Tonic.

Preparation: The dry plant is boiled, and the water used as a tonic.

Dosage/Application: 300 ml is taken 2 times daily.

Collection voucher: Tiwari 1702, 1804.

Botanical name: *Doliocarpus spraguei* Cheesm.

Common name: ka - ta - waik - yik (Patamona)

Woody liana along trail in savanna; leaves rough, sandpapery.

Use 1: Medicament for back pain.

Preparation: Wood is dried, cut into small pieces, boiled and the water used for treating back pain.

Dosage/Application: 150-300 ml is taken 2 times daily indefinitely.

Use 2: Medicament for impotence.

Preparation: The dry wood is boiled and the water drunk as a treatment for impotence.

Dosage/Application: 300 ml is taken 3 times daily.

Use 3: Tonic.

Preparation: The wood is dried, cut into pieces, boiled with water and used as a tonic.

Dosage/Application: 300 ml is taken 1-2 times daily .

Collecting voucher: Tiwari 1786.

Botanical name: *Pinzonia coriacea* Mart. & Zucc.

Common name: ka - ta - waik - yik (Patamona).

Woody liana along trail in forest; leaves rough, sandpapery.

Use 1: Medicament for back pain.

Preparation: The wood is boiled and the water drunk as a treatment for back pain.

Dosage/Application: 300 ml is drunk 2-3 times daily indefinitely.

Use 2: Medicament for impotence.

Preparation: The wood and bark is boiled and the water drunk as a treatment for impotence.

Dosage/Application: 300 ml is taken 3 times daily.

Use 3: Tonic.

Preparation: The wood is dried, cut into small pieces, boiled, and the water used as a tonic.

Dosage/Application: 300 ml is taken daily indefinitely.

Collecting voucher: Tiwari 1788.

Family: Euphorbiaceae

Botanical name: *Amanoa* cf. *guianensis* Aubl.

Common name: wac - sang - yik (Patamona).

Shrub 3-4 m high in the understorey of the forest; flowers white.

Use: Skin irritant.

This plant causes the skin to itch.

Collecting voucher: Tiwari 1720.

Botanical name: *Croton* sp.

Common name: none.

Herb along trail in forest; leaves sandpapery; inflorescence spicate, axillary.

Use: Anti-malarial.

Preparation: The roots are washed and boiled, the water is allowed to cool, and then drunk.

Dosage/Application: 350 ml is taken 2 times daily.

Collecting voucher: Tiwari 1715.

Botanical name: *Drypetes variabilis* Utt.

Common name: pa - sa - wa - ra - yik (Patamona).

Tree 3-5 m high along trail in forest; flowers off-white; fruit green.

Use 1: Anti-conjunctivitis.

Preparation: The leaves are macerated and the juice used as as an eye drop to heal eye infections.

Dosage/Application: 2 drops are applied 3 times daily.

Use 2: Medicament for eye infection.

Preparation: The leaves are macerated and the juice used as an eye drop to heal eye infections.

Dosage/Application: 1 drop is applied 2-3 times daily.

Use 3: Medicament for fevers.

Preparation: The leaves are boiled and the water used for washing the skin to lower the temperature in cases of high fever.

Dosage/Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 1813.

Botanical name: *Mabea caudata* Pax & Hoff.

Common name: nick - ka - ku - yik (Patamona).

Tree 10-11 m high, trunk bulbous, 16-18 cm diameter; outer bark deeply fissured, grayish-brown with longitudinal striations, 1-2 mm thick, yellowish-cream on inner surface; wood straight-veined, yellow, hard.

Additional Notes

1. This tree has a slight buttress.
2. Twigs and leaves have white latex; bark does not show any indication of white latex.

Use 1: Antiseptic.

Preparation: The bark is boiled, and the water used as an antiseptic agent.

Use 2: Medicament for cuts and wounds.

Preparation/Application: The latex is applied on cuts and bruises to stop bleeding.

Collection voucher: Tiwari 1644.

Prunin-6"-O-gallate, 4', 5, 7-trihydroxyflavanone, choerospondin, and 3"-p-coumaroylprunin are obtained from *M. caudata*. Chechum toxin is obtained from *M. excelsa*. 4', 5, 7-trihydroxyflavanone exhibited anti-ulcer properties and its variant (S)-

form is an antagonist to dormancy in peach; choerospondin inhibits aldose reductase (Buckingham, 1998).

Botanical name: *Mabea caudata* Pax & Hoff. Var. *concolor* Lanj.

Common name: nick - kha - gou - yik (Patamona).

Tree 8-10 m high in forest; bark with white latex; fruit trigonous, green.

Use 1: Medicament for sores.

Preparation: The latex is used as an ointment for sores.

Dosage/Application: It is applied 2 times daily.

Use 2: Medicament for wounds.

Preparation: The latex is applied on cuts for rapid healing.

Dosage/Application: It is applied 2 times daily.

Collecting voucher: Tiwari 1727 (see 1644).

Botanical name: *Pedilanthus retusus* Benth.

Common name: none.

Herb 1 m high in savanna; stem and trunk with white latex; flowers red.

Use 1: Anti-pruritic.

Preparation: The white latex is used for treating itching.

Dosage/Application: It is used as necessary, as an ointment.

Use 2: Antiseptic.

Preparation: The leaves are macerated and the juice applied to cuts and bruises for

rapid healing.

Dosage/Application: It is used as required.

Use 3: Emollient.

Preparation: The leaves are macerated and used as a poultice for abscesses.

Dosage/Application: The leaves are warmed and tied around the abscess to bring it to a point so that a "mouth" can be created and the pus easily squeezed out.

Use 4: Medicament for sores.

Preparation: The white latex is used as a medication for sores.

Dosage/Application: It is used as necessary, as an ointment.

Collection voucher: Tiwari 1812.

Botanical name: *Pedilanthus tithymaloides* (L.) Poit.

Common name: none.

Shrub; leaves minute, with free flowing white latex.

Use 1: Antiseptic.

Preparation: The white latex is antiseptic.

Dosage/Application: The latex is mixed with water and used externally to wash the affected area.

Use 2: Medicament for cuts and bruises.

Preparation: The white latex is applied on cuts and bruises for quick healing.

Dosage/Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 1825.

Family: Fabaceae

Botanical name: *Eriosema crinitum* G. Don

Common name: none.

Shrub 1-2 m high on bush island; flowers yellow.

Use: Anti-malarial.

Preparation: The roots are boiled and the water drunk as a treatment for malarial infection.

Dosage/Application: 350 ml is taken 2-3 times daily for 5-7 days.

Collecting voucher: Tiwari 1782 (see 1481).

Botanical name: *Lonchocarpus floribundus* Benth.

Common name: tu - pu - ray - king - yik (white hiariri) (Patamona).

Shrub 1 m high; flowers purplish-white; fruit a flat pod.

Use: Fish poison.

Preparation/Application: The roots are macerated and added to the water in streams and creeks to poison fishes.

Collecting voucher: Tiwari 1740.

Botanical name: *Lonchocarpus* cf. *latifolius* (Willd.) H.B.K.

Common name: black hiariri.

Tree about 2-3 m high; leaves compound, with a somewhat putrid smell; under surface

of leaves brownish-green, upper surface glaucous green.

Use: Fish poison.

Preparation: The roots are used as a fish poison.

Dosage/Application: The roots are ground and added to the water in streams and small creeks. The water will get murky and the fish will float to the surface, and thereby be easily caught.

Collecting voucher: Tiwari 1767.

Botanical name: *Myroxylon peruiferum* L.f.

Common name: pu - wa - yik (Patamona).

Tree about 10-12 m high; bark gray-black with a pungent medicinal smell.

Use 1: Anti-asthmatic.

Preparation: The crushed fruits are used as an inhalent for treating asthma.

Dosage/Application: It is used as required.

Use 2: Anti-diarrheal.

Preparation: The bark is scraped and boiled, and the water drunk for colds and diarrhea.

Dosage/Application: 150-300 ml is taken daily.

Use 3: Medicament for colds.

Preparation/Application: Fruits are strung like a necklace and worn around the neck so that their odor can be inhaled to clear the nasal and respiratory system as a treatment for colds.

Collection voucher: Tiwari 1807.

Coumestrol, an estrogenic agent binds to MCF-7 (human breast cancer cell) sites *in vitro*. 4', 7-dihydroxyflavanone is an anti-inflammatory agent; its variant (S)-form is important in flavours of citrus fruits. 3, 8, 9-trihydroxycoumestan and 3-hydroxy-8, 9-dimethoxycoumestan; 2', 3', 4', 7-tetrahydroxyisoflavanone; 2-(2, 4-dihydroxyphenyl)-5, 6-dihydroxybenzofuran; 2-(2, 4-dihydroxyphenyl)-5, 6-dimethoxybenzofuran; 3, 6-dihydroxy-12-oleanen-28-oic acid and its 3-ketone derivative; 9-O-methylcoumestrol; 3, 4, 9-trimethoxypterocarpan and its variant (-)-form are among compounds from *Myroxylon* sp. (Buckingham, 1998).

Family: Gentianaceae

Botanical name: *Irlbachia alata* (Aubl.) Maas

Common name: wai - gow - row - rai - yik (Patamona).

Shrub about 1 m high in weedy patch of forest; flowers yellow; fruit green.

Use 1: Laxative.

Preparation: The leaves are boiled, and the water drunk to alleviate constipation.

Dosage/Application: 350 ml is taken in the morning.

Use 2: Medicament for "bush-yaws".

Preparation: The leaves are macerated and the juice used for treating persistent sores.

Dosage/Application: It is applied indefinitely.

Use 3: Medicament for sores.

Preparation: The leaves are macerated and used as a poultice on sores.

Dosage/Application: Apply as necessary.

Collecting voucher: Tiwari 1704, 1769.

Family: Icacinaceae

Botanical name: *Poraqueiba sericea* Tul.

Common name: kha - ra - pouw - raí - yik (Patamona).

Shrub 3 m tall along trail; bark thin with pungent odor; inflorescence axillary, spicate; flowers very small; petals yellow.

Use: Nasal decongestant.

Preparation/Application: The bark is stripped from the tree, macerated, and inhaled to clear the nasal passages.

Collection voucher: Tiwari 1679.

Family: Lamiaceae

Botanical name: *Hyptis lantanifolia* Poit.

Common name: ou - ra - yik (Patamona).

Shrub less than 0.5 m high; flowers white.

Use 1: Antibacterial.

Preparation: The leaves are macerated and the juice used as an antibacterial agent.

Dosage/Application: It is applied externally to the affected area 3 times daily.

Use 2: Anti-conjunctivitis.

Preparation: The leaves are macerated and the juice squeezed in the eye to cure conjunctivitis.

Dosage/Application: 1 to 2 drops are placad in the affected eye 2-3 times daily.

Use 3: Medicament for eye infections.

Preparation: The leaves are macerated and the juice squeezed in the eye to cure eye infections.

Dosage/Application: Apply 1 drop to each eye 2 times daily.

Collection voucher: Tiwari 1824 (see 1591, 1595).

Botanical name: *Hyptis mutabilis* (Rich.) Briq.

Common name: thyme.

Herb less than 0.5 m high in savanna; flower greenish-yellow.

Use1: Flavouring agent.

The leaves are ground and used for flavouring foods.

Use 2: Medicament for colds.

Preparation: The leaves and stem are boiled and the water drunk as a medication for colds.

Dosage/Application: 150-300 ml is taken daily.

Collection voucher: Tiwari 1811 (see 1591, 1595).

Botanical name: *Scutellaria* sp.

Common name: ka - ruk - yik (Patamona).

Herb less than 1 m high; flower mauve; fruit green.

Use: Hallucinogenic.

Preparation: The plant is macerated, mixed with water and tobacco juice, and used by the piaiman during rituals. This probably assists the piaiman to experience hallucinations.

Dosage/Application: 300-600 ml is taken.

Collection voucher: 1816.

Xiao Piegen (1991) reported anti-pyretic and anti-microbial uses of the total root extracts from *S. baicalensis*. Among the compounds found in this plant are baicalein, baicalin, wagonin and wagonoside.

Family: Lauraceae

Botanical name: *Licaria debilis* (Mez.) Kosterm.

Common name: ka - ru - tu - rai - yik (Patamona).

Tree 6 m high with a straight trunk; fruit green.

Use: Medicament for warts.

The bark is used to treat warts on the skin. It is rubbed vigorously on the wart.

Dosage / Application: On average, 5-6 applications are necessary.

Collecting voucher: Tiwari 1743 (see 1409).

Botanical name: *Persea americana* Mill.

Common name: ap - pak – yik (Patamona).

Tree 5-6 m high along trail in forest; fruit a berry, globose.

Use: Anti-hypertensive.

Preparation: The leaves are boiled and the water drunk to lower the blood pressure.

Dosage / Application: 350 ml is taken daily for 6-9 days.

Collecting voucher: Tiwari 1840.

Cholesterol, campesterol, stigmasterol and sitosterol (beta) are four steroids from avocado oil (Sciancalepore and Dorbessan, 1982). Morton (1981) reported the presence of cyanide in the leaves and seeds. Feng *et al.* (1961) reported anti-hypertensive activity in rats. Mead *et al.* (1980) reported the erythro-agglutinating action of the seed extract. Caughey and Kekwick (1982) obtained enzyme preparations from the mesocarp.

Family: Loganiaceae

Botanical name: *Strychnos guianensis* (Aubl.) Mart.

Common name: ou - ra - rie - yik (Patamona).

Woody liana with tendrils; leaves opposite, glaucous green above, paler below.

Use: Poison.

Preparation: A mixture of the fruit and bark is boiled until its viscous, and then used as a poison.

Dosage/Application: Not known.

Collecting voucher: Tiwari 1759 (see 1480A).

Family: Loranthaceae

Botanical name: *Phoradendron crassifolius* (DC.) Eichl.

Common name: ouck - quoa - yik (Patamona).

Hemi parasitic on tree in forest; fruit an orange-yellow color.

Use 1: Anti-asthmatic.

Preparation: The leaves are boiled and the water drunk as medication for asthma.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Anti-tuberculosis.

Preparation: The leaves are boiled and the water drunk as a treatment for tuberculosis.

Dosage/Application: 150 ml is taken 3 times daily.

Use 3: Medicament for whooping cough.

Preparation: The leaves are boiled and the water drunk as medication for whooping cough or "baboon cough".

Dosage/Application: 350 ml is taken 2 times daily.

Collecting voucher: Tiwari 1754 (see 1450).

Botanical name: *Phoradendron* sp.

Common name: ouck - quoa - yik (Patamona).

Hemi parasitic on small tree; fruits white.

Use: Medicament for sores / emollient.

Preparation/Application: The leaves are macerated, wrapped in a piece of cloth and used as a poultice for sores.

Collection voucher: Tiwari 1670 (see 1450).

Botanical name: *Struthanthus dichotrianthus* Eichler

Common name: at - bik – yik (Patamona), birdvine.

Straggling, parasitic vine on citrus tree; fruit green, turning brown.

Uses: Anti-hypertensive.

Preparation: Whole plant is boiled and the water drunk for lowering high blood pressure.

Dosage / Application: 30 ml is taken daily, preferably in the morning for 5-7 days.

Collection voucher: Tiwari 1836 (see 1450).

Family: Malpighiaceae

Botanical name: *Brysonima concinna* Benth.

Common name: mou - rie - yik (Patamona).

Shrub 1-2 m high in savanna; inflorescence spicate; flowers yellow.

Use 1: Anti-diarrheal.

Preparation: The bark is scraped, boiled, and the water drunk for diarrhea.

Dosage/Application: 350 ml is taken 3 times daily for 3-5 days.

Use 2: Anti-infective.

Preparation/Application: The brown powder from the under surface of the leaves is collected, and applied on the placenta around a baby's navel to cut it off from the mother at the time of birth, and to prevent infection.

Use 3: Tanning agent.

Preparation: The bark is scraped and used for tanning leather.

Application: The bark is placed in the skin and tightly wrapped or folded during the tanning process. The process takes about a week.

Collection voucher: Tiwari 1690 (see 1660).

Botanical name: *Brysonima coriacea* (Sw.) Kunth Var. *spicata* (Cav.) Niedenzu

Common name: e - chak - yik (Patamona).

Shrub 3-4 m high in savanna; flowers yellow; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as a treatment for diarrhea.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The bark is boiled with water and drunk as treatment for dysentery or "bad-belly".

Dosage/Application: 350 ml is taken daily.

Collecting voucher: Tiwari 1737 (see 1660).

Botanical name: *Byrsonima crassifolia* (L.) H.B.K.

Common name: wouy - wey - yik (Patamona)

Tree 8-10 m high; trunk bent, 10-11 cm diameter; bark gray-brown, 2-3 mm thick, ringed, with scattered lenticels and a rank odor; wood straight-veined, pale yellow.

Use: Medicament for hypertension..

Preparation: The leaves are boiled and the water drunk for lowering high blood pressure.

Dosage/Application: 350 ml is taken daily for 7-10 days.

Collection voucher: Tiwari 1660.

Caceres *et al.* (1990, 1993a, 1993b) reported antibacterial activity in *in vitro* studies against enteropathogenic *Escherichia coli*, *Salmonella enteritidis*, *Salmonella.typhi*, *Shigella dysenteriae*, *Shigella flexneri*, *Staphylococcus aureus*, *Streptococcus pneumoniae* and *Streptococcus pyogenes* using alcoholic bark extracts of *Byrsonima crassifolia* (diarrhea & dysentery).

Botanical name: *Brysonima pachypoda* Adr. Juss.

Common name: ko - be - dak - wha - yik (Patamona).

Shrub 2-3 m high in open savanna; flowers pale pink; fruit green.

Use: Anti-malarial.

Preparation: The bark is boiled and the water allowed to cool, then drunk as a treatment for malarial infection.

Dosage/Application: 350 ml is taken daily for 1-2 weeks.

Collection voucher: Tiwari 1692 (see 1660).

Botanical name: *Brysonima verbascifolia* (L.) DC.

Common name: why - king - ba - na - yik (Patamona).

Shrub less than 1 m high in savanna; inflorescence spicate; flowers yellow.

Use 1: Anti-malarial.

Preparation: The bark of the root is scraped and boiled, and the liquid is drunk as a

treatment for malaria.

Dosage/Application: 175 ml is drunk 2 times daily for 1-2 weeks.

Use 2: Charm.

Preparation/Application: The whole plant is boiled with water and the liquid is drunk until the drinker is saturated, then vomited out as a "bena" or charm for deer hunting.

Collection voucher: Tiwari 1691 (see 1660).

Botanical name: *Stigmatophyllon fulgens* (Lam.) A. Juss.

Common name: ma - ko - yik (Patamona).

Climber along trail in forest; leaves opposite, cordate, dark green above, paler beneath.

Use 1: Anti-pyretic.

Preparation: The root are macerated in water and used for washing the skin as a treatment for high fevers.

Dosage/Application: Apply as necessary.

Use 2: Herbal bath.

Preparation: The leaves are macerated, boiled, and the water used for herbal baths.

Dosage/Application: Used as required.

Use 3: Medicament for coughing.

Preparation: The roots and leaves are boiled and the water drunk as a treatment for coughs.

Dosage/Application: 350 ml is taken 2 times daily.

Use 4: Medicament for skin conditions.

Preparation: The roots are macerated and used as an ointment for burning skin (rubbing the skin down when one's skin blazes like fire, very hot).

Dosage/Application: It is applied as necessary.

Collecting voucher: Tiwari 1744.

Botanical name: *Stigmaphyllon sinuatum* (DC.) A. Juss.

Common name: ma - ko - yik (Patamona).

Climber with greenish-red fruits.

Use 1: Herbal bath.

The leaves and stems are ground, boiled, and the water used for an herbal bath.

Dosage/Application: It is used as necessary.

Use 2: Medicament for fever.
Preparation: The leaves and stems are ground, boiled, and the water used for washing the skin to alleviate a high fever.

Dosage/Application: It is applied 3 times daily.

Collection voucher: Tiwari 1801.

Family: Malvaceae

Botanical name: *Gossypium brasiliense* L.

Common name: ka - ah - kwak - yik (Patamona).

Tree 3-4 m high; flowers yellow.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled and the water used for treating high fevers.

Dosage/Application: 75 ml is taken 2 times daily.

Use 2: Herbal bath.

Preparation: The leaves are boiled and the water used for herbal baths.

Dosage/Application: Use as necessary.

Collecting voucher: Tiwari 1749 (see 2132).

Gossypol is obtained from *Gossypium* (Bernardi and Goldblatt, 1969; Merck Index, 1996). Gossypol exhibited anti-fertility and anti-viral activities (Dorsett *et al.*, 1975). Elliger (1984) reported the presence of a diglycosylated flavenol, sexangularetin-3-glucoside-7-rhamnoside in another species *G. hirsutum*.

Botanical name: *Sida cordifolia* L.

Common name: ka - dah - qua - du - rai - yik (Patamona).

Herb less than 1 m high in savanna; flowers purple.

Use 1: Anti-pruritic.

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for itching.

Dosage/Application: It is used 2 times daily.

Use 2: Anti-pyretic.

Preparation: The whole plant is boiled and the water used for washing the skin as a

treatment for reducing high fevers.

Dosage/Application: It is applied 3 times daily.

Use 3: Herbal bath.

Preparation: The whole plant is boiled and the water used for herbal baths.

Dosage/Application: It is used as necessary.

Use 4: Medicament for chicken pox

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for chicken pox.

Dosage/Application: It is applied 3 times daily.

Use 5: Medicament for measles.

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for measles.

Dosage/Application: It is applied 3 times daily.

Collecting voucher: Tiwari 1779.

Family: Melastomataceae

Botanical name: *Mouriri* sp.

Common name: e - hep - pau - rai – yik (Patamona).

Tree 3-4 m high; bark with a rank odor.

Use: Medicament for muscular pain.

Preparation: The inner bark is warmed and used as a treatment for muscular aches and pains.

Collecting voucher: Tiwari 1843.

Family: Meliaceae

Botanical name: *Carapa guianensis* Aubl.

Common name: ka - ra - bai - yik (Patamona).

Tree 7-8 m high in forest; fruit brown.

Use 1: Anti-diarrheal.

Preparation: The nut is grated, soaked overnight and drunk for treatment of diarrhea.

Dosage/Application: 175 ml is taken 2 times daily.

Use 2: Anti-malarial.

Preparation: The nut is grated, soaked overnight or boiled, and the water drunk as a treatment for malarial infection.

Dosage/Application: 150 ml is taken 2 times daily for 8 days.

Use 3: Medicament for chicken pox.

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for chicken pox.

Dosage/Application: It is applied 3 times daily.

Use 4: Medicament for dry skin.

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for dry skin.

Dosage/Application: It is applied 2 times daily.

Use 5: Medicament for eczema / dermatosis

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for eczema.

Dosage/Application: It is applied as often as necessary.

Use 6: Medicament for measles.

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for measles.

Dosage/Application: It is applied 3 times daily.

Use 7: Medicament for scaling skin.

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for scaling of the skin.

Dosage/Application: It is applied as necessary.

Use 8: Medicament for sores.

Preparation: The nut is grated, mixed with palm oil, and used as an ointment for sores.

Dosage/Application: It is applied as necessary.

Collecting voucher: Tiwari 1719 (see 1504).

Botanical name: *Trichilia pallida* Sw.

Common name: ma - ra - na - yik (Patamona).

Tree about 8-9 m high in forest; inflorescence paniculate; flowers small, white.

Use 1 : Anti-fungal.

Preparation: The inner bark is macerated and used as an ointment for treating fungal

infection.

Dosage/Application: It is applied 3 times daily.

Use 2: Anti-pruritic.

Preparation: The inner bark and leaves are macerated and used as an ointment for treating itching.

Dosage/Application: It is applied 3 times daily.

Use 3: Medicament for chicken pox.

Preparation: The inner bark and leaves are macerated and used as an ointment for treating chicken pox infection.

Dosage/Application: It is applied 3 times daily.

Use 4: Medicament for eczema.

Preparation: The inner bark is macerated and used as an ointment for treating eczema.

Dosage/Application: It is applied 3 times daily.

Use 5: Medicament for measles.

Preparation: The inner bark and leaves are macerated and used as an ointment for treating measles.

Dosage/Application: It is applied 3 times daily.

Collecting voucher: Tiwari 1773.

Family: Menispermaceae

Botanical name: *Abuta imene* (Mart.) Eichl.

Common name: e - pi - pri - yik (Patamona).

Woody liana in forest; wood with a medicinal odor.

Use: Fish poison.

Preparation: The bark is used as a fish poison.

Dosage/Application: It is macerated, wrapped in leaves, and used as a fish poison.

Collecting voucher: Tiwari 1793.

Norrufescine, an alkaloid from the stem is cytotoxic against the P388 cells (Buckingham, 1998).

Family: Mimosaceae

Botanical name: *Acacia articulata* Ducke

Common name: ma - ri - ma - ri - yik (Patamona).

Small tree about 3-4 m high; leaves alternate, compound.

Use: Anti-arthritis.

Preparation: The leaves are warmed and strapped around joints for arthritis pain.

Dosage/Application: It is applied as often as possible.

Collecting voucher: Tiwari 1711 (see 1522).

Botanical name: *Acacia paniculata* Willd.

Common name: kha - ra - raik – yik (Patamona); guana-tail.

Shrub 2 m high along trail in forest; stems squarish and covered with spines.

Use 1: Anti-conjunctivitis.

Preparation: Water from the cut end of the stem is used as an eye drop as treatment for "red-eye", or conjunctivitis.

Dosage / Application: Apply 1-2 drops in the eye 2-3 times daily.

Use 2: Medicament for eye infections.

Preparation: Water from the cut end of the stem is used as an eye drop for infections.

Dosage / Application: 1-2 drops are placed in the eyes 2-3 times daily.

Collecting voucher: Tiwari 1841 (see 1522).

Botanical name: *Mimosa pigra* L.

Common name: a - mo - roun - yik (Patamona).

Shrub about 1 m high in savanna; flowers yellow.

Use: Anti-irritant.

Preparation: The leaves of this plant are macerated in the hands and rubbed on the eyes of babies or children to put them to sleep when they are irritable. Similarly, it is rubbed in the opposite direction on the eyes of babies or children to wake them up.

Collecting voucher: Tiwari 1849.

Botanical name: *Pentaclethra macroloba* (Willd.) Kuntze

Common name: awa - raik - kya - ray - yik (Patamona).

Tree 10-12 m high in forest; inflorescence spicate; fruit a thick, flat pod.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as treatment for diarrheal infection.

Dosage/Application: 350 ml is taken daily for 1-2 days.

Use 2: Anti-ulcerogenic.

Preparation: The bark is boiled with water and drunk as a treatment for stomach ulcers.

Dosage/Application: 150 ml is taken 2 times daily for 3-5 days.

Use 3: Emetic.

Preparation: The bark is boiled, and the water drunk as an emetic.

Dosage/Application: 600 ml is drunk.

Use 4: Medicament for stomach-ache.

Preparation: The bark is boiled with water and drunk for stomach-aches.

Dosage/Application: 175 ml is taken 2 times daily for 2-3 days.

Collecting voucher: Tiwari 1730 (see 1506).

Family: Monimiaceae

Botanical name: *Siparuna guianensis* Aubl.

Common name: tap - ring - yik (Patamona).

Shrub 2-3 m high along trail in forest; fruit a berry, green.

Use 1: Anti-pyretic.

Preparation: The bark is boiled, and the water drunk to alleviate fevers.

Dosage/Application: 175-350 ml is taken daily.

Use 2: Herbal bath.

Preparation: A lukewarm mixture of the bark and leaves in water is used for washing

the body to alleviate high temperatures.

Dosage/Application: Apply 2-3 times daily.

Use 3: Medicament for colds.

Preparation: The bark is boiled with water and given to babies for chest colds.

Dosage/Application: 10-15 ml is drunk 2 times daily.

Collection voucher: Tiwari 1694 (see 1473 A).

Family: Moraceae

Botanical name: *Brosimum alicastrum* Sw.

Common name: pui - yik (Patamona).

Small tree 6-8 m high; trunk bulbous, diameter 12-14 cm; bark gray-brown, 2-3 mm thick with white latex; wood pale yellow, hard.

Use 1: Medicament for coughing.

Preparation: The latex is mixed with water, warmed, and drunk for dry coughs.

Dosage/Application: 1-2 tablespoons are taken 2 times daily.

Use 2: Medicament for sores.

Preparation/Application: The latex is applied directly on sores in the mouth and other parts of the body for healing.

Use 3: Medicament for sore throat.

Preparation: The latex is mixed with water, warmed, and drunk for itchy sore throat.

Dosage/Application: 1-2 tablespoons are taken 2 times daily.

Collection voucher: Tiwari 1656 (see 1405).

Family: Musaceae

Botanical name: *Musa* sp.

Common name: ry - an - da - yik (Patamona).

Shrub 3-4 m high; stem glossy; leaves 1-3 m long, glabrous, dark green above paler beneath, petiole 0.5-1 m long, greenish-yellowish; fruit green, robust, in a bunch.

Use 1: Antiseptic.

Preparation: The sap from the plant is also applied to cuts to stop bleeding.

Use 2: Medicament for thrush.

Preparation: The sap from the fruit and tree is given to babies as a medication for thrush.

Dosage / Application: 3-5 ml is placed into a baby's mouth.

Collecting voucher: Tiwari 1842.

Family: Myristicaceae

Botanical name: *Virola sebifera* Aubl.

Common name: il - i - ga - wa - yik (Patamona).

Tree about 10-12 m high in forest; trunk straight, 15-17 cm in diameter; bark gray-brown; fruit a berry.

Use 1: Anti-diarrheal.

Preparation: The bark is macerated, soaked in water and drunk as a treatment for diarrhea.

Dosage/Application: 150-300 ml is taken for 2-3 days.

Use 2: Charm.

Preparation: Leaves and bark are macerated in water overnight and drunk as a charm for hunting savanna deer (why-king), akuri (aku), and labba (urran).

Dosage/Application: 600 ml is taken on the morning of the hunt.

Collecting voucher: Tiwari 1724 (see 1513).

Family: Myrtaceae

Botanical name: *Eugenia punicifolia* (H.B.K.) DC.

Common name: pea - cock - yik (Patamona).

Shrub about 1-2 m high in open savanna; leaves and stem very fragrant; flowers white; fruit a berry, green, edible.

Use: Medicament for colds.

Preparation: Leaves and bark are boiled with water and drunk for common colds.

Dosage/Application: 175-350 ml is taken 2 times daily.

Collection voucher: Tiwari 1695 (see 1469).

Botanical name: *Mrycia guianensis* (Aubl.) DC.

Common name: tuk - pong - yik (Patamona).

Small tree along trail in forest; fruit a berry.

Use: Anti-dysenteric.

Preparation: Leaves and bark are boiled and the water drunk as a treatment for dysentery.

Dosage/Application: 150 ml is taken 3 times daily.

Collecting voucher: Tiwari 1712.

Botanical name: *Myrcia tomentosa* (Aubl.) DC.

Common name: mi - gan - pi - me -you - yik (Patamona).

Shrub about 2 m high in savanna; fruit a berry, red.

Use: Anti-diarrheal.

Preparation: The roots are boiled and the water drunk as a treatment for diarrhea.

Dosage/Application: 175 ml is taken 2 times daily.

Collecting voucher: Tiwari 1785.

Botanical name: *Psidium acutangulum* DC.

Common name: ma - ra - yaou - yik (Patamona).

Shrub 2-3 m high in savanna; flowers white.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as a treatment for diarrhea.

Dosage/Application: 150-300 ml is taken 3 times daily.

Use 2: Anti-dysenteric.

Preparation: The young fruit is grated and the juice is drunk as treatment for bloody dysentery or "bad-belly".

Dosage/Application: 15-30 ml is taken 2-3 times daily.

Use 3: Tonic.

Preparation: The fruits are used for making a tonic.

Dosage/Application: 350 ml is taken daily.

Collecting voucher: Tiwari 1735.

Botanical name: *Psidium acutangulum* Benth.

Common name: gua - ba – yik (Patamona).

Tree 4-5 m high; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as a medication for diarrhea.

Dosage / Application: 150 ml is taken two times daily.

Use 2: Anti-dysenteric.

Preparation 1: The young leaves are boiled and drunk as a medication for dysentery.

Dosage / Application: 150 ml is taken three times daily.

Preparation 2: The young fruits are grated and the juice drunk as a treatment for bloody dysentery or "bad-belly".

Dosage / Application: 15 ml is taken 3-4 times daily.

Collecting voucher: Tiwari 1838 (see 1837).

Botanical name: *Psidium guajava* L.

Common name: gua - ba – yik (Patamona).

Tree 2-3 m high; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as a medication for diarrhea.

Dosage / Application: 150 ml is taken two times daily.

Use 2: Anti-dysenteric.

Preparation 1: The young leaves are boiled and the water drunk as a medication for dysentery.

Dosage / Application: 150 ml is taken three times daily.

Preparation 2: The young fruits are grated and the juice drunk as a medication for bloody dysentery or "bad-belly".

Dosage / Application: 15 ml is taken 3-4 times daily.

Collection voucher: Tiwari 1837.

Caceres *et al.* (1990, 1993a, 1993b) reported antibacterial activity in *in vitro* studies against enteropathogenic *Escherichia coli*, *Salmonella enteritidis*, *Salmonella typhi*, *Shigella dysenteriae*, *Shigella flexneri*, *Staphylococcus aureus*, *Streptococcus pneumoniae* and *Streptococcus pyogenes* using extracts of *Psidium guajava*. Ekabua and Eka (1978) reported high antibacterial activity and astringent properties of the tannins found in roots, leaves and bark extracts of *Psidium guajava*.

Botanical name: *Psidium guineense* Sw.

Common name: ma - ra - yao - yik (Patamona).

Tree along trail in forest; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as a treatment for diarrhea.

Dosage/Application: 150-300 ml is taken 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The young fruits are grated, the juice squeezed and used as medication for treating dysentery or "bad-belly".

Dosage/Application: 15 ml is taken 2-3 times daily.

Collection voucher: Tiwari 1802 (see 1553).

Family: Papaveraceae

Botanical name: *Bocconia pearcei* Hutch.

Common name: i - ki - ya - mo - yik (Patamona).

Tree about 3-5 m high; leaves palmately compound; fruit cauliflorous, green.

Use: Anti-dysenteric.

Preparation: The root is boiled and the water drunk for dysentery, or "bad belly".

Dosage/Application: 150 -300 ml is taken morning and afternoon for 2-3 days.

Collecting voucher: Tiwari 1789.

Family: Passifloraceae

Botanical name: *Passiflora glandulosa* Cav.

Common name: ak - kour - mang - yik (Patamona).

Climber on trees in forest; flowers red.

Uses: Tonic.

Preparation: Fruits are soaked in water and used for making a tonic.

Dosage/Application: 300 ml is taken 2 times daily.

Collecting voucher: Tiwari 1718 (see 1612).

Botanical name: *Passiflora pedata* L.

Common name: none.

Climber with tendrils; flowers with red bracts.

Use: Tonic.

Preparation: The fruit is boiled and the liquid used as a tonic.

Dosage/Application: 300 ml is taken 2 times daily.

Collection voucher: Tiwari 1803 (see 1612).

Family: Piperaceae

Botanical name: *Piper peltatum* L.

Common name: tu - kok -yik (Patamona); cowfoot leaf.

Shrub 1-2 m high; inflorescence spicate; fruit green.

Use 1: Anti-hypertensive.

Preparation: The leaves are boiled and the water drunk for lowering high blood pressure.

Use 2: Herbal bath.

Preparation: The whole plant is boiled and the water used as an herbal bath.

Dosage / Application: 15 ml is taken daily for 5-7 days.

Use 3: Medicament for fever.

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for reducing high fevers.

Use 4: Medicament for headaches.

Preparation: The plant is heated and tied or wrapped around the head and forehead for treating headaches.

Collecting voucher: Tiwari 1846 (see 1502).

Family: Poaceae

Botanical name: *Cymbopogon citratus* L.

Common name: wa - na - boui - ma - yik (Patamona); fever grass, lemon grass.

Grass about 1 m high; blade with a citrus-like smell.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled and the water used as a treatment for fever.

Dosage/Application: 300 ml is taken 2 times daily.

Use 2: Medicament for influenza.

Preparation: The leaves are boiled and the water used as a treatment for influenza.

Dosage/Application: 300 ml is taken 3 times daily.

Use 3: Tonic.

Preparation: The leaves are boiled and the liquid used as a tonic.

Dosage/Application: 300 ml is taken 3 times daily.

Collection voucher: Tiwari 1826.

Alpha-citral, β -citral isolated from *Cymbopogon citratus* demonstrated antibacterial activity against *Escherichia coli*, *Staphylococcus aureus* and *Bacillus subtilis*. Myrcene, another component demonstrated antibacterial activity against *Staphylococcus aureus* only (Onawunmi *et al.*, 1984). Almagouri *et al.* (1985) reported antibacterial effects using extracts of *Cymbopogon nervatus*. Sterols and/or triterpenes are the principal compounds in the extract. Xiao Piegen (1991) reported piperitone, a preparation from another species *C. distans* whole plant extract is used for treating chronic bronchitis and is also an asthmolytic. Buckingham (1998) list twenty-nine compounds for this plant with uses in the food, perfume and soap industries.

Botanical name: *Olyra latifolia* L.

Common name: nuu - aay - yik (Patamona).

Grass along trail in forest; inflorescence paniculate; fruit green.

Use: Anti-infective.

Preparation: The blades are macerated and applied to the cut umbilical cord to prevent infection.

Dosage/Application: Apply 3-4 times daily.

Collecting voucher: Tiwari 1763.

Botanical name: *Olyra latifolia* L.

Common name: kam - bu - duk – yik (Patamona).

Spreading grass alongside trail in savanna.

Use: Shampoo.

Preparation: Lemmas are macerated and used for washing the head to get rid of dandruff.

Dosage / Application: It is used as often as possible.

Collecting voucher: Tiwari 1845.

Botanical name: *Olyra micrantha* H.B.K.

Common name: nuu - whey - yik (Patamona).

Grass in forest about 1-2 m tall; inflorescence paniculate; fruits black.

Use: Anti-infective.

Preparation/Application: Blades are macerated and applied to babies' umbilical cord to prevent infection and to speed up the drying process so that it can easily fall off after birth.

Collecting voucher: Tiwari 1701.

Botanical name: *Oplismenus* sp.

Common name: a - tu - wa - na - pu - yik (Patamona).

Stoloniferous grass growing in savanna; flowers green.

Use 1: Anti-pyretic.

Preparation: The stolon is washed and chewed as a medication for fever.

Dosage/Application: It is chewed as necessary.

Use 2: Medicament for colds.

Preparation: The stolon is washed and chewed as a medication for colds.

Dosage/Application: It is used as required.

Collection voucher: Tiwari 1823.

Family: Portulacaceae

Botanical name: *Portulaca oleracea* L.

Common name: none.

Spreading herb about 35-40 cm high; stem glabrous, reddish-brown; leaves succulent; fruit green.

Use 1: Anti-arthritis.

Preparation: The whole plant is boiled and the water used for treating the pain of arthritis.

Dosage/Application: The hot water is used to wash the affected area 2-3 times daily until healed.

Use 2: Antiseptic.

Preparation: The whole plant is macerated and the juice applied to cuts and bruises to stop bleeding and to heal wounds.

Dosage/Application: It is applied as necessary.

Use 3: Medicament for muscular pain.

Preparation: The whole plant is boiled and the water used for treating muscular pains.

Dosage/Application: The hot water is used to wash the affected area 2-3 times daily until healed.

Collection voucher: Tiwari 1835.

Family: Adiantaceae

Botanical name: *Adiantopsis radiata* (L.) Fee

Common name: ap - pi - gee - yik (Patamona).

Fern less than 1 m high in moist area of forest.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and used for treating itching.

Dosage/Application: It is applied 2-3 times daily.

Use 2: Medicament for "bush-yaws".

Preparation: The leaves are macerated and the juice used as an ointment for treating persistent sores.

Dosage/Application: It is applied 3 times daily.

Use 3: Medicament for chicken pox.

Preparation: The leaves are macerated and vigorously rubbed on the skin to treat chicken pox.

Dosage/Application: It is applied 3 times daily.

Use 4: Medicament for measles.

Preparation: The leaves are macerated and vigorously rubbed on the skin for treatment of chicken pox.

Dosage/Application: It is applied 3 times daily.

Collecting voucher: Tiwari 1772.

Family: Schizaeaceae

Botanical name: *Lygodium micans* Sturm.

Common name: mo - ruk - yik (Patamona).

Climber along forest trail; spores arranged along leaf blades like frills.

Use 1: Anti-pruritic.

Preparation: Leaves and stems are macerated and used as a treatment for itching.

Dosage/Application: Apply as necessary.

Use 2: Emetic.

Preparation: The leaves and stems are boiled with water, allowed to cool, then drunk as an emetic.

Dosage/Application: 350 ml is drunk.

Use 3: Medicament for chicken pox.

Preparation: The leaves and stems are boiled with water and used for washing the skin as treatment for chicken pox.

Dosage/Application: It is applied 3 times daily.

Use 4: Medicament for eczema / dermatosis.

Preparation: Leaves and stems are macerated and used for treating eczema.

Dosage/Application: It is applied as often as possible.

Use 5: Medicament for measles.

Preparation: Leaves and stems are boiled and a pinch of table salt added to the water,

which is used as a treatment for measles.

Dosage/Application: 175-350 ml is taken 2 times daily 2 days. Considered a most effective treatment for skin infections.

Collecting voucher: Tiwari 1713.

8-Hydroxyhexadecanoic acid is obtained from *L. japonicum*, and 2 methylanthraquinone (tectoquinone), lygodinolide, 3-O-(4-Hydroxycinnamoyl) dryocrassol are obtained from *L. flexuosum*. 8-hydroxyhexadecanoic acid inhibits spore germination (Buckingham, 1998).

Family: Rubiaceae

Botanical name: *Genipa spruceana* Steyerm.

Common name: kah - ruk -yik (Patamona).

Tree about 6 m high in open patch of forest; fruit a berry with numerous seeds.

Use 1: Anti-fungal.

Preparation: The immature fruit is scraped and used as an ointment for treating fungal infections.

Dosage/Application: It is applied as necessary.

Use 2: Eczema.

Preparation: The immature fruit is scraped and used as an ointment for treating eczema.

Dosage/Application: It is applied as necessary.

Use 3: Medicament for sores.

Preparation: The bark is scraped and used as a poultice for sores.

Collecting voucher: Tiwari 1755 (see 1586).

Botanical name: *Palicourea rigida* H. B.K.

Common name: ah - pu - mang - yik (Patamona).

Shrub less than 0.5 m high in open savanna; inflorescence spicate; flowers yellow.

Use 1: Herbal bath.

Preparation/Application: Leaves are boiled, the water cooled to lukewarm, and used for herbal baths..

Use 2: Medicament for colds.

Preparation: The leaves are boiled, and the water is allowed to cool, and drunk for colds.

Dosage/Application: 175 ml is taken daily for 3-5 days.

Collection voucher: Tiwari 1689.

Family: Rutaceae

Botanical name: *Citrus aurantiifolia* Swingle

Common name: lime.

Tree 3-4 m high; spiny; fruit green.

Use 1: Abortifacient.

Preparation: Roots are boiled, the water mixed with alcohol, and drunk to abort a fetus up to six weeks old.

Dosage/Application: According to Mrs. Elsie Pio, 350 ml of the alcohol-decoction will

induce an abortion. The mixture is taken in a 1: 1 ratio of alcohol:decoction at midnight.

Use 2: Anti-pyretic.

Preparation: Juice from the fruit is mixed with a pinch of salt and drunk for chest colds and fever.

Dosage/Application: 15 ml is taken 2-3 times daily.

Use 3: Anti-venom.

Preparation: The juice from the fruit is mixed with grated garlic and some water and drunk for snake bite.

Dosage/Application: 15-30 ml is taken 3 times daily.

Use 4: Medicament for colds.

Preparation: The leaves are boiled and the water used as a medication for colds.

Dosage/Application: 350 ml is taken 2-3 times daily.

Use 5: Tonic.

Preparation: Juice from the fruit is also used for making a tonic.

Dosage/Application: 1-5 fruits are used for every gallon of water depending on how acid one wants the beverage.

Collection voucher: Tiwari 1834.

Verpoorte and Dihal (1987) reported antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Asperigillus niger*, and *Candida albicans* using extract from *Citrus aurantiifolia*. Pinol, p-menth-3-en-1-ol,

and bergamotene are among the 412 compounds of *Citrus* (Buckingham, 1998).

Botanical name: *Citrus limon* (L.) Burm.

Common name: lemon.

Tree about 2-3 m high; trunk and stems with spines; fruit green.

Use: Medicament for colds.

Preparation: The leaves are boiled and the water drunk for treating colds.

Dosage/Application: 175 ml is taken 2-3 times daily.

Preparation: The fruit is squeezed and the juice boiled with the leaves of matrush and drunk for treating colds.

Dosage/Application: 15 ml is taken 2 times daily.

Collection voucher: Tiwari 1830 (see 1834).

Family: Sapindaceae

Botanical name: *Paullinia acuminata* Utt.

Common name: pi - gik - yik (Patamona).

Woody vine in forest; tendrils present.

Use: Fish poison.

Preparation: The wood is used as a fish poison.

Dosage/Application: The vine is pulverized and used for poisoning streams.

Collecting voucher: Tiwari 1791.

Botanical name: *Paullinia rufescens* L.C. Rich. ex Juss.

Common name: ki - kwa - na (Patamona).

Woody climber with a triangular stem.

Use: Fish poison.

Preparation/Application: The stem is used as a fish poison. The stem is macerated and added to water in streams and creeks. The water turns black, and stunned fish rise to the surface, where they are easily caught.

Collecting voucher: Tiwari 1742.

Family: Scrophulariaceae

Botanical name: *Scoparia dulcis* L.

Common name: Sweet broom.

Shrub less than 0.5 m high in savanna; flowers tiny, green.

Use 1: Antibacterial.

Preparation: The leaves are macerated and the juice used as an antibiotic eye-drop.

Dosage/Application: 1 drop is applied 3 times daily.

Use 2: Anti-pyretic.

Preparation: The whole plant is boiled and the water drunk as a medication for fevers.

Dosage/Application: 350 ml is taken at least 3 times a day.

Use 3: Medicament for back pain.

Preparation: The whole plant is boiled with water and drunk as a treatment for back pain.

Dosage/Application: 350 ml is taken 2 times daily.

Use 4: Medicament for eye infections.

Preparation: The leaves are boiled and the water used as an eye-wash for infected eyes.

Dosage/Application: It is applied 2-3 times daily.

Use 5: Medicament for influenza.

Preparation: The whole plant is boiled and the water drunk as a medication for influenza.

Dosage/Application: 350 ml is taken at least 3 times a day.

Use 4: Tonic.

Preparation: The leaves are boiled and the water used as a tonic.

Dosage/Application: 350 ml is taken daily.

Collecting voucher: Tiwari 1738, 1797.

Ramesh *et al.* (1979) identified 7-O-methylscutellarein and scutellarein, two flavonoids, in the ethanolic extracts of fresh leaves of *Scoparia dulcis*. The flavonoid glycoside scutellarein-7-O- β -D-glucoronide is also present. Betulinic and afflaionic acids, 6-methoxybenzoxazolinone and amellin are also found in this plant. Amellin is used as an anti-diabetic agent while 6-methoxybenzoxazolinone is a hypotensive substance (Chen and Chen, 1976; Mahato *et al.*, 1981). Dulciol, dulciolone, sitoserol, hexacosanol, D-mannitol, scutellarin, scutellarein, friedelin, glutinol, and dulcioic acid are obtained from this plant (Satynarayana, 1969; Ramesh *et al.*, 1979; Mahato *et al.*, 1981).

Family: Simaroubaceae

Botanical name: *Quassia amara* L.f.

Common name: ya - ko - yik (Patamona).

Tree about 4-5 m high in savanna; inflorescence paniculate; flowers greenish yellow.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as a medication for diarrhea.

Dosage/Application: 150 ml is taken 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The bark is boiled and the water drunk as a medication for bloody dysentery.

Dosage/Application: 300 ml is taken 2 times daily.

Use 3: Anti-malarial.

Preparation: The bark is boiled and the water drunk as a treatment for malarial infection.

Dosage/Application: 150-300 ml is taken 2 times daily.

Collection voucher: Tiwari 1819 (see 1698).

Botanical name: *Simaruba amara* Aubl.

Common name: ya - ko - yik (Patamona).

Tree about 5-6 m high in savanna alongside ravine; inflorescence paniculate; fruit green.

Use 1: Anti-pyretic.

Preparation: The inner bark is macerated, boiled, and drunk as treatment for fevers.

Dosage/Application: 175 ml is taken 2 times daily.

Use 2: Medicament for colds.

Preparation: The inner bark is scraped, boiled, and the water drunk to treat colds.

Dosage/Application: 175 ml is taken daily for 4-5 days.

Collection voucher: Tiwari 1698.

Giesbrecht *et al.* (1980) reported two new alkaloids, from the bark of *Simarouba cuspidata* Spruce ex Engel. The alkaloids 8-methoxycanthin-6-one and 3-methoxycanthin-2, 6-dione, are canthinones with potential antimicrobial properties. Caceres *et al.* (1990) reported antibacterial activity in *in vitro* studies against enteropathogenic *Escherichia coli*, *Salmonella enteritidis*, *Salmonella typhi*, *Shigella dysenteriae* and *Shigella flexneri* using extracts of *Simarouba glauca* (*Quassia simarouba*).

Family: Solanaceae

Botanical name: *Capsicum* sp.

Common name: pi - mi - ruk - yik (Patamona).

Herb less than 1 m high; fruit a green berry.

Use: Spice.

Preparation: The fruit is hot and is used as a spice.

Collection voucher: Tiwari 1810 (see 1602).

Botanical name: *Nicotiana tabacum* L.

Common name: ka - waik - yik; ku - e - ka - yik (Patamona).

Shrub about 1-2 m high; flowers pale pink; fruit green.

Use 1: Anti-asthmatic.

Preparation: The leaves and stems are macerated and the juice used as a treatment for asthma.

Dosage/Application: 15 ml is inhaled 3 times daily.

Use 2: Hallucinogenic.

Preparation: The leaves are dried, and chewed to produce hallucinations.

Dosage/Application: 2-3 leaves are chewed as necessary.

Preparation: The leaves are macerated, and the juice collected and drunk during ritual processes when the piaiman is engaged in rituals.

Dosage/Application: 150-300 ml is drunk.

Use 3: Medicament for colds.

Preparation: The leaves and stems are macerated and the juice inhaled as a medication for colds.

Dosage/Application: 15 ml is inhaled 3 times daily.

Use 4: Intoxicant.

Preparation/Application: The leaves are dried and used for smoking and chewing.

Collecting voucher: Tiwari 1761, 1799.

Botanical name: *Solanum nigrum* L.

Common name: ku - ya - wick - yik (Patamona).

Shrub 2-3 m high in savanna; flowers purple with yellow stamens; fruit a berry, green.

Use: Anti-malarial.

Preparation: The root is washed clean, boiled with water, mixed with lime juice and a pinch of salt, and is drunk as a treatment for malaria.

Dosage/Application: 350 ml is taken 2 times daily.

Collection voucher: Tiwari 1680 (see 1473).

Botanical name: *Solanum cf. schlehtendalianum* Walp.

Common name: ku - ya - wick - yik (Patamona).

Shrub about 1 m high in open savanna; fruit a green berry.

Use: Anti-malarial.

Preparation: The root is boiled with water, mixed with lime juice and a pinch of table salt, and drunk as a treatment for malarial infection.

Dosage/Application: 350 ml is drunk 2 times daily.

Collection voucher: Tiwari 1685 (see 1473).

Family: Tiliaceae

Botanical name: *Apiaba albiflora* Ducke

Common name: puoi - yik (Patamona).

Tree 6-8 m high along trail in forest; flowers cream-yellow; fruit black.

Use: Charm.

Preparation: Fruits are used as a charm by the women when making the fermented cassava drink known as "casseri" so that the casseri will be strong.

Dosage/Application: Fruits are eaten.

Collection voucher: Tiwari 1808.

Family: Turneraceae

Botanical name: *Turnera rupestris* L.

Common name: ka - da - qua - du - tu - rai - yik (Patamona).

Shrub less than 1 m high in savanna; flowers orange-yellow.

Use 1: Anti-pyretic.

Preparation: The whole plant is boiled and the water drunk for reducing fevers.

Dosage/Application: 175 ml is drunk 1-2 times daily depending on severity of infection

Use 2: Herbal bath.

Preparation/Application: The whole plant is boiled with water, allowed to cool and used for herbal baths.

Collection voucher: Tiwari 1683.

Family: Verbenaceae

Botanical name: *Lantana camara* L.

Common name: kwah - wuk - ki - ma - yik (Patamona).

Herb about 1m high in savanna; inflorescence an umbel; flowers with an orange-red corolla

Use 1: Anti-asthmatic.

Preparation: The root is boiled with water and drunk as treatment for asthma.

Dosage/Application: 350 ml is taken 2 times daily (2-3 weeks).

Use 2: Anti-pruritic.

Preparation: The whole plant is boiled and the water used to treat itching.

Dosage/Application: Apply as necessary.

Use 3: Anti-pyretic.

Preparation: The leaves are boiled and the water drunk to alleviate high fevers.

Dosage/Application: 350 ml is taken 2 times daily.

Use 4: Herbal bath.

Preparation: The whole plant is boiled with water and used for an herbal bath.

Dosage/Application: Apply as required.

Use 5: Medicament for back pain.

Preparation: The leaves are boiled and the water drunk as a treatment for back pain.

Dosage/Application: 350 ml is taken daily in the morning.

Use 6: Medicament for chicken pox.

Preparation: The whole plant is boiled with water and used for washing the skin as treatment for chicken pox.

Dosage/Application: Three treatments are taken daily.

Use 7: Medicament for colds.

Preparation: The leaves are boiled and the water drunk for treating colds.

Dosage/Application: 350 ml is taken 3 times daily.

Use 8: Medicament for coughing.

Preparation: The leaves are boiled and the water drunk for treating coughs.

Dosage/Application: 350 ml is taken 3 times daily.

Use 9: Medicament for measles.

Preparation: The whole plant is boiled and the water used for washing the skin as a treatment for measles.

Dosage/Application: Two treatments are taken daily.

Collection voucher: Tiwari 1681 (see 1471).

Botanical name: *Phyla* sp.

Common name: kwah - wuk - ki - ma - yik (Patamona).

Shrub 2-3 m high in open savanna; trunk and stem with spines; flowers in axillary spikes with dense cylindrical heads; petals fused, with a long white corolla tube.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled with water and drunk as a treatment for high fevers.

Dosage/Application: 350 ml is taken 2 times daily.

Use 2: Medicament for colds.

Preparation: The leaves are boiled with water and drunk as treatment for colds.

Dosage/Application: 350 ml is taken 3 times daily.

Use 3: Medicament for coughs.

Preparation: The leaves are boiled with water and drunk as a treatment for coughing.

Dosage/Application: 350 ml is taken 3 times daily.

Collection voucher: Tiwari 1682.

Family: Vochysiaceae

Botanical name: *Qualea albiflora* Warm.

Common name: queck - yik (Patamona).

Tree about 10-12 m high in forest, trunk straight, 22-25 cm in diameter; bark gray-black with longitudinal fissures.

Use: Anti-venom.

Preparation: The bark is boiled and the water used to treat snakebite.

Dosage/Application: The afflicted area is immersed in a concentrated solution for about 10 minutes, 3 times daily.

Collecting voucher: Tiwari 1723.

Family: Zingiberaceae

Botanical name: *Renealmia floribunda* K. Schum.

Common name: ko - no - pyia - ray - yik (Patamona).

Shrub about 1-2 m high in forest; flowers red; fruit red, turning black.

Use 1: Anti-fungal.

Preparation: The fruits are used as an anti-fungal agent for curing ringworms and "lata".

Dosage/Application: It is applied as necessary.

Use 2: Anti-malarial.

Preparation: The root is boiled with water and drunk as a cure for malarial infection.

Dosage/Application: 350 ml is taken daily for 5 days.

Use 3: Medicament for dermatitis and skin conditions

Preparation: The fruits are rubbed on the skin to get rid of white spots.

Dosage/Application: It is applied as necessary.

Collecting voucher: Tiwari 1734.

Botanical name: *Zingiber officinale* Rosc.

Common name: mu - sah - yik, cu - sa - laa - yik,(Patamona); ginger.

Herb 0.5-1 m high; stems dark green, with trichomes; rhizome irregular

Use 1: Anti-pyretic.

Preparation: The rhizome is boiled and the water used as a treatment for fever.

Use 2: Beverage.

Preparation: The rhizome is used for making beverages.

Use 3: Flavoring agent.

Preparation: The rhizome is used for flavouring food.

Use 4: Medicament for colds.

Preparation: The rhizome is grated, mixed with water, and dropped in the nostrils for treating colds.

Use 5: Medicament for migraine.

Preparation: The rhizome is grated, mixed with water, and dropped in the eyes for curing migraine headaches.

Collecting voucher: Tiwari 1844.

Beloy *et al.* (1976) reported exceptionally high antimicrobial activity using extracts from *Zingiber officinale*.

Chapter 4

Medicinal Plants of Kopinang

Kopinang, a forested village located in the Upper Potaro Region in the Northern Pakaraima Mountain Range at 675 feet elevation and 4° 58' N and 57° 50' W, was surveyed for medicinal plants. Twenty individuals were independently interviewed using the artifact-interview and the inventory-interview method. Forty-three families, representing 27.22 % of the families in the flora of the Region, 66 genera representing 8.42% of the genera in the Region, and 73 species representing 4.05% of the species in the flora of the Region, were documented as having medicinal uses. Fifty use categories were documented. Five species are used to treat asthma, 7 to treat diarrhea, 7 to treat fungal infections, 6 to treat malaria, 12 to treat fever, 1 as an anti-menorrhagic agent and 2 to treat itching. The part of plant, method of preparation and dosage / application are described below. Appendix 7 gave details of medicinal use categories and the percent species in each family used for medicinal purposes at Kopinang.

Family: Amaranthaceae

Botanical name: *Achyranthes aspera* L.

Common name: none.

Weedy herb 1 m high; inflorescence spicate; flowers whitish-blue; fruits lacking hooked spines.

Use 1: Anti-pyretic.

Preparation: The whole plant is boiled, and the water drunk to alleviate high fevers.

Dosage / Application: 150 ml is taken 2 times daily.

Use 2: Antiseptic.

Preparation: The whole plant is boiled, and the water used as an antiseptic.

Use 3: Herbal bath.

Preparation: The whole plant is mixed with leaves of *Gossypium* and leaves of *Lantana*, boiled and used for herbal bath.

Use 4: Medicament for back pain.

Preparation: The whole plant is dried, boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 150-300 ml is taken 2 times daily.

Use 5: Medicament for cold sweat.

Preparation: The whole plant is boiled, and the water used for washing the skin as treatment for cold sweat.

Dosage / Application: It is applied 2 times daily.

Use 6: Medicament for influenza.

Preparation: The whole plant is boiled, and the water drunk as a treatment for influenza and fevers.

Dosage / Application: 150 ml is taken 3 times daily.

Collection voucher: Tiwari 1907 (see 1829).

Family: Anacardiaceae

Botanical name: *Anacardium occidentale* L.

Common name: wak-roik-yik (Patamona).

Tree 30 m high; trunk straight, diameter 12-14 cm; leaves alternate, glaucous green above, paler beneath; bark greyish-white, 3-4 mm thick, flaky, with slight ranalean (frof-like) odor, no latex; inner bark reddish; fruit a berry, green; wood creamish-red, straight veined, hard.

Use: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 150 ml is taken 2-3 times daily.

Collection voucher: Tiwari 1884 (see 1684).

Family: Annonaceae

Botanical name: *Duguetia pycnastera* Sandw.

Common name: kale-che-lay-yik (Patamona).

Tree about 20 m high; trunk bent, diameter 10-11 cm; bark greyish-brown, 2-4 mm thick, rough, lenticels scattered, longitudinally fissured, odorless; fruit green; wood creamish-yellow, straight-veined, hard.

Use: Medicament for muscular aches and pain.

Preparation: The bark is warmed and used as a poultice for muscular aches and pains.

Collection voucher: Tiwari 1877 (see 1758).

Casagrande and Ferrari (1970) reported three alkaloids, norglaucine, 9, 10-dimethoxy-7-hydroxy 1-2- methylenedioxyaporphine(duguetine) and an (-)enantiomer of dicentrine, isolated from a Brazilian *Duguetia* species.

Botanical name: *Duguetia pycnastera* Sandw.

Common name: tec-leuw-yik (Patamona).

Tree 2 m high alongside trail in forest; fruit syncarpous, green.

Use 1: Anti-pyretic.

Preparation: The leaves are macerated in water and used for treating fevers.

Use 2: Herbal bath.

Preparation: The leaves are macerated in water and used as an herbal bath.

Use 3: Medicament for cold sweat .

Preparation: The leaves are macerated in water and used for washing the body as a treatment for cold sweat.

Dosage / Application: Applied 2-3 times daily.

Collection voucher: Tiwari 1926 (see 1758).

Botanical name: *Guatteria paludosa* R.E. Fr.

Common name: ma-nak-yik (Patamona).

Tree 6 m high; fruit syncarp, globose; monocarp glabrous, brown.

Use: Anti-venom.

Preparation: The bark is macerated and the juice applied on to snakebite for rapid

healing.

Dosage / Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 2181.

Anaxagoreine and a variant, (R)-form of the alkaloid asimilobine are obtained from *Guatteria* (Buckingham, 1998).

Botanical name: *Rollinia exsucca* (DC. ex Dunal) A. DC.

Common name: pai-lau-uh-raie-yik (Patamona).

Tree 10 m high; fruit green, turning red.

Use: Medicament for heart disorders.

Preparation: The bark is boiled, and the water drunk for treatment of cardiac disorders.

Dosage / Application: 75 ml is taken daily.

Collection voucher: Tiwari 1941.

Family: Apocynaceae

Botanical name: *Aspidosperma album* (Vahl) R. Ben.

Common name: pah-gai-yik (Patamona).

Tree about 20 m high, with small buttress; trunk straight, diameter 60-62 cm; bark greyish-red, 3-4 mm thick, flaky, longitudinally fissured, inner bark husky, cream coloured; bark with a somewhat burning odor; wood creamish-yellow, straight veined; wood sample taken.

Use 1: Anti-malarial.

Preparation: The bark is boiled, and the water drunk as a treatment for malarial infection.

Use 2: Anti-pyretic.

Preparation: The bark is boiled, and water drunk as a treatment for high fevers.

Dosage / Application: 75 ml is taken 2 times daily..

Medicament for dermatosis.

Preparation: Inner bark macerated and juice applied to affected area.

Collection voucher: Tiwari 1878 (see 1413).

Botanical name: *Aspidosperma album* (Vahl) R. Ben.

Common name: peh-goui-yik (Patamona).

Tree 30 m high; trunk straight, bulbous, diameter 39-40 cm; leaves alternate, compound, dark green above, paler beneath; bark grey-brown, 4-5 mm thick, longitudinally fissured, flaky, latex white; odor somewhat putrid; inner bark creamish; wood cream colored, straight veined, hard.

Use 1: Anti-fungal.

Preparation: The bark is macerated and the juice used as treatment for fungal infection.

Use 2: Anti-malarial.

Preparation: The bark is boiled, and the water drunk as treatment for malarial infection.

Use 3: Anti-pyretic.

Preparation: The bark is boiled, and the water drunk as treatment for high fevers.

Dosage / Application: 75 ml is taken 2 times daily.

Collection voucher: Tiwari 1886, 1890 (1413).

Family: Araceae

Botanical name: *Anthurium* sp.

Common name: none.

Epiphytic; spathe cream color; spadix dark brown.

Use 1: Medicament for "bush-yaws".

Preparation: Sap from a cut end is used for treating persistent sores.

Use 2: Medicament for wounds.

Preparation: The macerated leaves and sap from a cut end is used as a treatment for wounds.

Collection voucher: Tiwari 2172 (see 1747).

Family: Arecaceae

Botanical name: *Euterpe precatoria* Mart.

Common name: wa-si-yik (Patamona).

Solitary, unarmed tree to 7 m high, fruit a berry, brown turning black.

Use: Anti-malarial.

Preparation: The roots are boiled, and the water drunk for treating malarial infections.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Collection voucher: Tiwari 2200.

Family: Asteraceae

Botanical name: *Bidens cynapifolia* H.B.K.

Common name: kam-bu-duk-yik (Patamona).

Herb 1 m high; flowers yellow.

Use 1: Analgesic.

Preparation: The whole plant is boiled, and the water drunk as a treatment for pains.

Dosage / Application: 150-300 ml is taken 2 times daily.

Use 2: Anti-malarial.

Preparation: The whole plant is boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: 150-300 ml is taken 3 times daily.

Use 3: Anti-pyretic.

Preparation: The whole plant is boiled, and the water drunk as a treatment for fever.

Dosage / Application: 300 ml is taken 2 times daily.

Collection voucher: Tiwari 1922.

Botanical name: *Mikania psilostachya* DC.

Common name: none.

Straggling vine along forest edge; flowers white.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a treatment for fevers.

Dosage / Application: 150-300 ml is taken 3 times daily.

Use 2: Blood purifier.

Preparation: Leaves and stem are boiled, and the water drunk for "purifying the blood".

(Diseases are often thought to be caused by impure blood).

Dosage / Application: 150-300 ml is taken daily.

Collection voucher: Tiwari 1917 (see 1552).

Botanical name: Unknown.

Common name: ko-no-ruk-yik (Patamona).

Herb less than 1 m high; flowers white.

Use 1: Anti-arthritic.

Preparation: A decoction of the whole is drunk as a treatment for arthritic pain.

Dosage / Application: 300 ml is taken 2-3 times daily.

Use 2: Medicament for muscular aches and pains.

Preparation: The whole plant is boiled, and the water used for treating muscular aches and pains.

Collection voucher: Tiwari 2205.

Family: Bignoniaceae

Botanical name: *Jacaranda copaia* Sprague

Common name: pa-sa-yik (Patamona).

Tree 8-9 m high; leaves compound.

Use: Medicament for "bush-yaws".

Preparation: Juice from the young leaves is warmed and applied to persistent sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2195 (see 1731).

Family: Burseraceae

Botanical name: *Trattinickia burserifolia* Mart.

Common name: war-gang-yik (Patamona).

Tree 20 m high.

Use 1: Charm.

Preparation: The bark is allowed to stand in water overnight and drunk for success in a hunting expedition.

Use 2: Medicament for colds.

Preparation: The bark is boiled with water and drunk as a treatment for colds.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Collection voucher: Tiwari 2204.

Family: Caesalpiniaceae

Botanical name: *Bauhinia guianensis* Aubl.

Common name: kha-woui-eng-gu-ma-pui-yik (Patamona).

Woody liana in canopy; stem somewhat flattened, undulating.

Use: Anti-diarrheal.

Preparation: The wood is ground, soaked in water for about 1/2-1 hour and used for treating diarrhea.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Collection voucher: Tiwari 1906.

Botanical name: *Swartzia laevicarpa* Amsl.

Common name: tu-mour-reng-yik (Patamona).

Tree 34-35 m high; trunk straight, diameter 28-30 cm; leaves opposite; bark greyish-brown, 2-4 mm thick, longitudinally fissured, lenticels raised, with slight red latex and a somewhat ranalean odor; inner bark dark red; wood whitish, straight veined, soft.

Use 1: Charm.

Preparation: The bark is scraped, soaked in water, and drunk as a charm for hunting savanna deer.

Use 2: Emetic.

Preparation: The bark is boiled, and the water drunk as an emetic.

Dosage / Application: 300 ml is taken.

Collection voucher: Tiwari 1885, 1891, 1896, 1900, 1902, 1903.

Family: Cannaceae

Botanical name: *Canna indica* L.

Common name: none.

Shrub 1 m high; leaves large, spirally arranged; inflorescence a terminal raceme;

flowers red; fruit a capsule; seeds black.

Use 1: Medicament for "cleaning bladder".

Preparation: The leaves are boiled, and the water used as a diuretic.

Dosage / Application: 75 ml is taken 2 times daily.

Use 2: Medicament for venereal disease.

Preparation: The roots are macerated and juice used for treating venereal disease.

Collection voucher: Tiwari 1911.

Keracyanin, a pigment of the fresh blossoms of *Canna generalis* improves vision in humans and is used to treat night blindness (Buckingham, 1998: BFH51-Q).

Family: Cecropiaceae

Botanical name: *Cecropia obtusa* Trec.

Common name: ka-ma-ying-yik (Patamona).

Tree about 7 m high in weedy patch of forest; inflorescence yellowish.

Use 1: Beverage.

Preparation: The leaves are boiled and the water used as a beverage.

Use 2: Blood purifier.

Preparation: The leaves are boiled, and the water drunk to purify the blood.

Dosage / Application: 150-300 ml is taken daily.

Use 3: Medicament for back pain.

Preparation: The leaves are boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 300 ml is taken 2-3 times daily indefinitely.

Use 4: Tonic.

Preparation: The leaves are boiled, and the water used as a tonic.

Collection voucher: Tiwari 1916.

Family: Chrysobalanaceae

Botanical name: *Licania densiflora* Kleinh.

Common name: tung-seng-yik (Patamona).

Tree 20 m high; trunk straight, diameter 12-14 cm; bark grey, 3-5 mm thick, lenticels raised; with cucumber-like odor; inner bark reddish; wood yellowish-cream, straight veined, hard.

Use: Anti-asthmatic.

Preparation: The bark is boiled, and the water drunk as a treatment for asthma.

Dosage / Application: 75 ml is taken 2 times daily.

Collection voucher: Tiwari 1889, 1892, 1894.

Family: Clusiaceae

Botanical name: *Clusia grandiflora* Splitg.

Common name: nuu-yik (Patamona).

Liana; fruit a large capsule, with stigmatic remains, dehiscing by woody valves.

Use 1: Antiseptic.

Preparation: The wood is boiled, and the water used as an antiseptic agent.

Use 2: Medicament for sores.

Preparation: The wood is boiled, and the water used for treating sores.

Use 3: Medicament for wounds.

Preparation: The wood is boiled, and the water used as a treatment for cuts and wounds.

Collection voucher: Tiwari 2174 (see 1462)

Botanical name: *Platonia insigninis* Mart.

Common name: kah-nong-yik (Patamona).

Tree 26 m high with a small buttress; leaves opposite, glaucous green above, paler beneath; trunk slightly bent; diameter 60-63 cm; bark greyish-brown, 1-2 mm thick, with raised lenticels and a slight burning odor; inner bark brown; wood straight veined, creamish-brown, soft; wood sample taken.

Use: Anti-diarrheal.

Preparation: The bark is boiled, and the water and drunk as a treatment for diarrhea.

Dosage / Application: 75 ml is taken 3 times daily.

Collection voucher: Tiwari 1871, 1898.

Botanical name: *Symphonia globulifera* L.f.

Common name: mi-dah-ying-yik (Patamona).

Tree 20 m high with small buttress and stilt roots; trunk straight, diameter 45-46 cm; bark reddish-brown, 7-8 mm thick, flaky, longitudinally fissured, latex yellow; inner bark yellow; wood cream colored, straight veined, soft.

Use 1: Medicament for sores.

Preparation: Burnt ash is used for treating sores.

Use 2: Paint.

Preparation: The latex is hardened, burnt and the ash is used as paint.

Collection voucher: Tiwari 1888, 1904 (see 1462).

Botanical name: *Vismia cayennensis* (Jacq.) Pers.

Common name: wong-we-sa-yik (Patamona).

Tree 4 m high; bark with orange latex; flowers yellowish; fruit a berry, green.

Use 1: Anti-herpetic.

Preparation: The bark is macerated and the juice applied around the groin region as treatment for herpes.

Dosage / Application: As above indefinitely.

Use 2: Anti-infective.

Preparation: The latex is used as an anti-infective agent.

Dosage / Application: As above as often as necessary.

Use 3: Medicament for eye infections.

Preparation: The latex is dropped into the eyes to cure infections.

Dosage / Application: As above 1-2 drops daily.

Collection voucher: Tiwari 1938.

Pasqua *et al.* (1995) reported the accumulation of Vismione A in regenerated

plants of *Vismia guianensis* DC. Delle Monache *et al.* (1979) reported the isolation of Vismione A and B from the berries of another species *Vismia baccifera* var. *dealbata*.

Botanical name: *Vismia guianensis* (Aubl.) Choisy

Common name: wa-ya-mac-yik (Patamona).

Shrub 3 m high along forest edge; fruit a berry, green.

Use 1: Anti-fungal.

Preparation: The latex is applied on ringworm and other fungal infections for healing.

Dosage / Application: As above 3 times daily.

Use 2: Anti-infective.

Preparation: The bark is macerated and the juice used as an anti-infective agent.

Use 3: Medicament for "bush-yaws".

Preparation: The latex is applied onto persistent sores to promote healing.

Dosage / Application: It is applied as often as possible.

Use 4: Medicament for sore eyes.

Preparation: The latex is used as a drop to heal sore eyes.

Dosage / Application: As above 1 drop to infected eye daily.

Collection voucher: Tiwari 1915.

Pasqua *et al.* (1995) reported the accumulation of Vismione A in regenerated plants of *Vismia guianensis* DC.

Family: Commelinaceae

Botanical name: *Tripogandra serrulata* (Vahl.) Handlos

Common name: wa-gu-ma-yik (Patamona).

Creeping herb; leaves somewhat succulent, sheathing the stem, green above, purple beneath; flowers white.

Use 1: Beverage.

Preparation: The plant is boiled, and the water used as a beverage.

Use 2: Charm.

Preparation: The plant is macerated, soaked in water overnight and drunk, to ensure success before embarking on a hunting expedition, especially when hunting savanna deer.

Use 3: Emetic.

Preparation : The whole plant is macerated in water and used as an emetic.

Dosage / Application: 300 -500 ml is drunk.

Use 4: Tonic.

Preparation : The leaves are boiled and used as a tonic.

Dosage / Application: 75 ml is taken daily indefinitely.

Use 5: Medicament for tuberculosis.

Preparation: The leaves are boiled, and the water drunk as a treatment for tuberculosis.

Dosage / Application: 150 ml is taken 3 times daily.

Collection voucher: Tiwari 2178.

Family: Costaceae

Botanical name: *Costus claviger* R. & P.

Common name: ah-mam-rha-yik (Patamona).

Herb 2-3 m high; leaves spirally arranged.

Use 1: Analgesic.

Preparation: Juice from the slightly warmed stem is applied in the ear for treating pain.

Dosage / Application: Two drops are applied 3 times daily.

Use 2: Antibacterial.

Preparation: The juice from the stem is slightly warmed, and is applied in the ear to treat bacterial infections.

Dosage / Application: It is applied (1-2 drops) 3 times daily.

Use 3: Anti-infective.

Preparation: Juice from the slightly warmed stem is applied in the ear to cure infections.

Dosage / Application: As above (1-2 drops) 2-3 times daily.

Use 4: Medicament for colds.

Preparation: Juice from the macerated stem is warmed and drunk to cure severe colds.

Dosage / Application: 15 ml is taken 2-3 times daily.

Collection voucher: Tiwari 1910 (see 1589).

Family: Crassulaceae

Botanical name: *Bryophyllum pinnatum* L.

Common name: none.

Succulent herb in savanna.

Use 1: Antibacterial.

Preparation: The leaves are macerated and used to treat bacterial infections.

Dosage: not available.

Use 2: Anti-edemic.

Preparation: The leaves are macerated, warmed and used as a treatment for edema.

Dosage: not available.

Use 3: Anti-fungal.

Preparation: The leaves are macerated and used for treating fungal infections of the skin.

Dosage: not available.

Use 4: Antiseptic.

Preparation: The leaves are macerated and used as an antiseptic.

Dosage: not available.

Use 5: Emollient.

Preparation: The leaves are macerated and used as a poultice.

Dosage: not available.

Use 6: Medicament for diaper rash.

Preparation: The leaves are macerated and used for treating diaper rash.

Dosage: not available.

Use 7: Medicament for sores.

Preparation: The leaves are macerated and used for treating sores.

Dosage: not available.

Collection voucher: Tiwari 1953.

Family: Cyperaceae

Botanical name: *Scleria arundinacea* Kunth.

Common name: sa-laa-yik (Patamona).

Grass about 1 m high; leaves with sharp edges; inflorescence paniculate; fruit round, shiny.

Use 1: Antiseptic.

Preparation: Fruits are burnt and the ashes used as an antiseptic agent.

Use 2: Medicament for burns.

Preparation: Fruits are burnt and the ashes used as an ointment for treating burns.

Dosage / Application: It is applied as often as possible.

Collection voucher: Tiwari 2183.

Family: Dilleniaceae

Botanical name: *Davilla kunthii* A. St. Hil.

Common name: ka-ta-waik-yik (Patamona).

Liana along forest margin; leaves alternate, coriaceous; fruit berry-like.

Use 2: Beverage

Preparation: The leaves and stems are boiled with water and used as a beverage.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 1: Medicament for back pain.

Preparation: The leaves and stems are boiled with water and used as a treatment for back pain.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 3: Tonic.

Preparation: The whole plant is boiled, and the water used as a tonic.

Dosage / Application: 150 ml is taken daily indefinitely.

Collection voucher: Tiwari 1933.

Botanical name: *Doliocarpus spraguei* Cheesm.

Common name: ka-ta-waik-yik (Patamona).

Woody liana; leaves alternate, coriaceous, somewhat rough.

Use 1: Aphrodisiac.

Preparation: The dry wood is boiled, and the water used as an aphrodisiac.

Dosage / Application: 300 ml is 2 times daily taken indefinitely.

Use 2: Beverage.

Preparation: The dry wood is boiled with water and used as a beverage.

Use 3: Medicament for back pain.

Preparation: The dry wood is boiled, and the water and drunk as a treatment for back

pain.

Dosage / Application: 150-300 ml is taken 2 times daily indefinitely.

Use 4: Medicament for impotence.

Preparation: The dry wood is boiled, and the water drunk as a treatment for impotence.

Dosage / Application: 300 ml is 3-4 times daily taken indefinitely.

Use 5: Tonic.

Preparation: The dry wood is boiled with water and drunk as tonic.

Dosage / Application: 150-300 ml is taken indefinitely.

Collection voucher: Tiwari 1930.

Family: Fabaceae

Botanical name: *Hymenolobium nitidum* Benth.

Common name: te-be-ling-yik (Patamona).

Shrub 1-2 m high.

Use: Fish poison.

Preparation: The whole plant is placed in a bag, macerated, and allowed to stand in water as a means for harvesting fishes.

Collection voucher: Tiwari 2191.

Botanical name: *Lonchocarpus* cf. *floribundus* Benth.

Common name: a-ya-yik (Patamona).

Liana in weedy patch of savanna.

Use: Fish poison.

Preparation: The bark and wood are bundled together, ground and used as a fish poison.

Collection voucher: Tiwari 1946.

Botanical name: *Lonchocarpus* sp.

Common name: none.

Shrub 1-2 m high in savanna.

Use: Fish poison.

Preparation: The whole plant is macerated in a bag, and stood in water overnight as a fish poison.

Collection voucher: Tiwari 2193.

Botanical name: *Mucuna urens* (L.) DC.

Common name: a-mo-go-ye-no-yik (Patamona).

Woody liana; leaves 3-foliolate, membranaceous, with stipulate; fruit a pod, leathery. covered with stinging hairs, yellowish-brown.

Use: Irritant.

Hairs on fruits are skin irritants, causing severe itching.

Collection voucher: Tiwari 1931.

L-Dopa from the fruit extract of *M. semipervirens* is reported to possess anti-Parkinson activity (Peigen, 1991). Buckingham (1998) list thirty-one compounds associated with *Mucuna*. Among the compounds are DOPA ($C_9H_{11}NO_4$) used to treat

Parkinson's disease. Its variant (S)-form is toxic to the reproductive system and shows tetragenic effects. Its a systemic drug with adverse effects when used therapeutically.

$C_{10}H_{12}N_2O$, 5-hydroxytryptamine and its derivative, antemovis, is a vasoconstrictor.

The alkaloid prurienine is a vasodilator, hypotensive agent and a peristaltic stimulant.

Among the other alkaloids are mucadine, mucadinine, mucadininie, mucunine, prurienidine and prurieninine (Buckingham, 1998: *Mucuna*).

Family: Gentianaceae

Botanical name: *Irlbachia alata* (Aubl.) Maas

Common name: why-gow-row-rai-yik (Patamona).

Shrub about 1 m high in weedy patch of forest; flowers pale yellow; fruit green.

Use 1: Antibacterial.

Preparation: The leaves are macerated with a pinch of salt and used for treating bacterial infections.

Dosage / Application: As above 2-3 times daily.

Use 2: Anti-fungal.

Preparation: The leaves are macerated with a pinch of salt and used for treating fungal infections.

Dosage / Application: As above 2 times daily.

Use 3: Laxative.

Preparation: The leaves are boiled with water and drunk as a laxative.

Dosage / Application: 300 ml is taken at night.

Use 4: Medicament for chicken pox.

Preparation: Juice from the macerated leaves is used for treating chicken pox.

Dosage / Application: As above 2-3 times daily.

Use 5: Medicament for eczema.

Preparation: Juice from the macerated leaves is used for treating eczema.

Dosage / Application: As above 2-3 times daily.

Use 6: Medicament for measles.

Preparation: Juice from the macerated leaves is used for treating measles.

Dosage / Application: As above 2-3 times daily.

Use 7: Medicament for sores.

Preparation: Juice from the macerated leaves is used for treating sores.

Dosage / Application: It is applied 2-3 times daily.

Use 8: Tonic.

Preparation: The leaves are boiled with water and drunk as a tonic.

Dosage / Application: 15 ml is taken daily.

Collection voucher: Tiwari 1914.

Family: Lecythidaceae

Botanical name: *Eschweilera sagotiana* Miers

Common name: pah-gai-yik (Patamona).

Tree about 30 m high; leaves alternate, compound, glaucous green; trunk straight, diameter 30-32 mm; bark flaky, thin, 1-3 mm thick, gray-brown, longitudinally fissured, with a slight ranalean odor; wood pale yellow, straight-veined.

Use: Antiseptic.

Preparation: The bark is boiled, and the water used as an antiseptic.

Collection voucher: Tiwari 1875, 1897 (see 1476).

Family: Loranthaceae

Botanical name: *Oryctanthus florulentus* (Rich.) Urban

Common name: none.

Parasitic vine; leaves opposite, leathery; fruit a berry, yellow

Use 1: Antiseptic.

Preparation: The leaves are macerated and the juice is used as an antiseptic.

Use 2: Emollient.

Preparation: The leaves are heated and used as an emollient.

Use 3: Medicament for cuts and wounds.

Preparation: The leaves are macerated and applied to cuts and wounds.

Use 4: Medicament for sores.

Preparation: The leaves are macerated and used as poultice for sores.

Use 5: Medicament for whooping cough.

Preparation: The leaves and stems are boiled, and the water drunk as a treatment for

whooping cough.

Dosage / Application: 75-150 ml is taken 2 times daily indefinitely.

Collection voucher: Tiwari 1932 (see 1450).

Botanical name: *Oryctanthus florulentus* (Rich.) Urban

Common name: yah-bou- ga-yik (Patamona).

Parasitic vine; leaves slightly lobed and succulent; inflorescence pale yellow.

Use: Medicament for whooping cough.

Preparation: The whole plant is boiled, and the water drunk as a treatment for whooping cough.

Dosage / Application: 75-150 ml is taken daily.

Collection voucher: Tiwari 2192 (see 1450).

Family: Lycopodiaceae

Botanical name: *Lycopodiella ceruna* (L.) Pic. Ser.

Common name: why-king-lea-tu-yik (Patamona)

Spreading herb in moist places in savanna; fertile branches erect.

Use: Charm.

Preparation: The whole plant is boiled and the water drunk before a hunt as a charm for a successful hunting expedition.

Dosage / Application: 300-600 ml is drunk.

Collection voucher: Tiwari 2176.

Family: Malvaceae

Botanical name: *Gossypium brasiliense* L.

Common name: none.

Shrub 2-3 m high; flowers yellow; fruit green.

Use 1: Analgesic.

Preparation: The whole plant is boiled, and the water drunk as an analgesic.

Dosage / Application: 150 ml is taken 2 times daily.

Use 2: Antibacterial.

Preparation: The flowers and leaves are boiled, and the water drunk as a treatment for bacterial infections.

Dosage / Application: 75 ml is taken 3 times daily.

Use 3: Medicament for ear infections.

Preparation: The juice from warmed, young fruits is used as drops for ear infections and earache.

Dosage / Application: 1-2 drops are dropped into the ear 2 times daily.

Use 4: Medicament for liver problems.

Preparation: The flowers and leaves are macerated, boiled, and the water drunk as a treatment for liver disorders.

Dosage / Application: 75 ml is taken 2 times daily.

Collection voucher: Tiwari 1947.

Botanical name: *Pavonia fruticosa* (Willd.) Fawc. & Rendle

Common name: ka-da-kwah-du-rai-yik (Patamona)

Herb less than 1 m high; flowers orange; fruit a berry, green.

Use 1: Antipyretic.

Preparation: The leaves are macerated in water, and used for treating fevers.

Dosage / Application: 75 ml is taken 2 times daily.

Use 2: Herbal bath.

Preparation: The whole plant is macerated in water, and used for an herbal bath.

Use 3: Medicament for cold sweat.

Preparation: The leaves are macerated in water, and used for washing the skin as treatment for cold sweat.

Dosage / Application: It is applied 2 times daily as required.

Collection voucher: Tiwari 1945.

Family: Malpighiaceae

Botanical name: *Banisteriopsis lucida* (L.C. Rich.) Small

Common name: ka-ri-eh-much-yik (Patamona).

Herb 1 m high; flowers pinkish-white; fruit a samara.

Use 1: Antibacterial.

Preparation: The leaves are boiled, and the water drunk as a treatment for bacterial infections.

Dosage / Application: 75 ml is taken 2-3 times daily.

Use 2: Anti-pyretic

Preparation: The whole plant is boiled with water and drunk as a treatment for fevers.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Use 3: Anti-viral

Preparation: The leaves are boiled, and the water drunk as a treatment for viral infections.

Dosage / Application: 150 ml is taken 2-3 times daily.

Use 4: Medicament for colds

Preparation: The whole plant is boiled with water and drunk as a treatment for colds.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Use 5: Medicament for cold sweat

Preparation: The whole plant is boiled, and the water used to treat cold sweat.

Dosage / Application: The affected person is bathed with the decoction.

Collection voucher: Tiwari 2194

Harmidine, an alkaloid found in some *Banisteriopsis* sp., can be used against Parkinson's disease, and elsewhere in South America is used to make a hallucinogenic drink. Nigerrine, found in *Banisteriopsis argentea* and several other plants, also has hallucinogenic effects. Other alkaloids from this genus include arenarine C, dehydroshihunine, harmol, methyl harmate, harmic amide and harmalinic acid (Buckingham, 1998).

Botanical name: *Stigmaphyllon sinuatum* (DC.) Adr. Juss.

Common name: ma-ko-yik (Patamona).

Liana along forest edge and in savanna.

Use 1: Anti-pyretic.

Preparation: The whole plant is boiled, and the water drunk as a treatment for fever.

Dosage / Application: 150 ml is taken 2-3 times daily.

Use 2: Herbal bath.

Preparation: The whole plant is boiled with water and used for herbal bath.

Use 3: Medicament for cold-fever

Preparation: The whole plant is macerated, boiled with water and used for washing the skin as a treatment for cold-fever.

Dosage / Application: It is 2-3 times daily.

Use 4: Medicament for cold sweat.

Preparation: The whole plant is macerated, boiled with water and used for washing the skin as a treatment for cold sweat.

Dosage / Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 1909.

Botanical name: *Stigmaphyllon sinuatum* (DC.) Adr. Juss.

Common name: ma-ko-yik (Patamona).

Climber; leaves opposite, lobed, chordate at the base.

Use: Medicament for cold sweat.

Preparation: The leaves are boiled and the water used as a treatment for cold sweat.

Collection voucher: Tiwari 2185.

Family: Melastomataceae

Botanical name: *Bellucia pentamera* Naud.

Common name: jah-ga-ri-yik (Patamona).

Tree 4-5 m high; flowers pinkish-white, stamens yellow; fruit a berry, green.

Use: Medicament for thrush.

Preparation: The juice from the bark is given to babies as a treatment for thrush.

Dosage / Application: 8 ml is used 2 times daily.

Collection voucher: Tiwari 2179.

Family: Meliaceae

Botanical name: *Carapa guianensis* Aubl.

Common name: ka-ra-ba-yik (Patamona).

Tree 10 m high, fruit a capsule, woody; seeds triangular.

Use 1: Anti-herpetic.

Preparation: The seeds are ground, mixed with palm oil, and used as an ointment for treating genital herpes.

Dosage / Application: It is used as required.

Use 2: Anti-pruritic.

Preparation: The seeds are ground, mixed with palm oil, and used as an ointment to treat itching.

Dosage / Application: It is used as required.

Use 3: Medicament for chicken pox.

Preparation: The bark is boiled, and the water used for treating chicken pox.

Dosage / Application: The skin is washed with the decoction 3 times daily.

Use 4: Medicament for measles.

Preparation: The bark is boiled, and the water used for treating measles.

Dosage / Application: The skin is washed with the decoction 3 times daily.

Use 5: Medicament for mumps.

Preparation: Seeds are ground, oil is extracted and used as an ointment to treat swelling, such as caused by mumps.

Dosage / Application: It is used as required.

Use 6: Medicament for sores.

Preparation: The seeds are ground, mixed with palm oil, and used as an ointment for treating sores.

Dosage / Application: It is used as required.

Collection voucher: Tiwari 2186 (see 1504).

Botanical name: *Guarea gomma* Pulle

Common name: we-youw-yik (Patamona).

Tree 12-13 m high; trunk bent, rough, diameter 12-14 cm; bark greyish-green, 2-3 mm thick, with ranalean odor; inner bark yellow; wood yellowish-cream, straight veined, hard; leaves alternate, compound; stipules large; fruit brown.

Use 1: Medicament for colds.

Preparation: The bark is boiled, and the water drunk as a treatment for colds.

Dosage / Application: 75 ml is taken daily.

Use 2: Medicament for coughing.

Preparation: The bark is boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 75 ml is taken daily.

Collection voucher: Tiwari 1872.

Botanical name: *Trichilia micrantha* Benth.

Common name: tu-mour-reng-yik (Patamona).

Tree 20-22 m high; trunk straight, diameter 10-11 cm; bark greyish-brown, 1-3 mm thick, longitudinally fissured, lenticels raised, with slight red latex and a somewhat ranalean odor; inner bark dark red; wood whitish, straight veined, soft.

Use 1: Charm.

Preparation: The bark is scraped, soaked in water and drunk as a charm for hunting savanna deer.

Use 2: Emetic.

Preparation: The bark is boiled, and the water drunk as an emetic.

Dosage / Application: 300 ml is taken.

Collection voucher: Tiwari 1879.

Family: Mimosaceae

Botanical name: *Abarema jupunba* (Willd.) Britton & Killip

Common name: *tuc-cun-nang-yik* (Patamona).

Tree 15 m high; leaves alternate, compound; leaflets opposite.

Use 1: Medicament for itchy scalp.

Preparation: The inner bark is used for treating itchy scalp.

Dosage / Application: It is used as often as possible.

Use 2: Shampoo.

The bark is used as shampoo.

Dosage / Application: It is used as often as possible.

Use 3: Soap.

The bark is also used as soap.

Collection voucher: Tiwari 1929.

Botanical name: *Pentaclethra macroloba* (Willd.) O. Kuntze

Common name: *a-wa-rie-gaik-yik* (Patamona).

Tree 7 m high; fruit a pod, falcate, green.

Use 1: Fish poison.

Preparation: The inner bark is placed in bags, macerated and then placed in streams and

creeks to poison fish.

Use 2: Medicament for thrush.

Preparation: Juice from the bark is given to babies as a treatment for thrush.

Dosage / Application: 8-15 ml is taken 1-2 times daily.

Collection voucher: Tiwari 2184 (see 1506).

Family: Monimiaceae

Botanical name: *Siparuna guianensis* Aubl.

Common name: tap-ring-yik (Patamona).

Shrub 2-3 m high; leaves opposite, simple, with strong pungent odor; fruit drupaceous, green when young, reddish-purple when mature.

Use 1: Anti-fungal.

Preparation: The bark and leaves are macerated and the juice used for treating fungal infection.

Dosage / Application: It is applied as necessary.

Use 2: Anti-helminthic (hookworm).

Preparation: The bark is boiled, and the water drunk as a treatment for hookworm.

Dosage / Application: 150 ml is taken 2-3 nights.

Use 3: Anti-pyretic.

Preparation: The leaves are macerated in cold water and used for treating fevers.

Dosage / Application: 50 ml is taken 2 times daily.

Use 4: Herbal bath.

Preparation: The leaves are macerated in water and used as an herbal bath.

Dosage / Application: As above 2-3 times daily.

Collection voucher: Tiwari 1936.

Family: Moraceae

Botanical name: *Brosimum utile* (H.B.K.) Pittier

Common name: pui-yik (Patamona).

Tree 16-20 m high, trunk straight, diameter 70-75 cm; bark grey-brown, 14-15 mm thick, rough; latex milky white; wood yellowish, straight veined, hard.

Use 1: Medicament for colds.

Preparation: The latex is drunk as medication for colds.

Dosage / Application: 15 ml is taken 2 times daily.

Use 2: Medicament for whooping cough.

Preparation: The latex is drunk as medication for whooping cough.

Dosage / Application: 15 ml is taken 3 times daily.

Collection voucher: Tiwari 1901(see 1405).

Family: Myristicaceae

Botanical name: *Compsonura* sp.

Common name: ma-rie-gok-yik (Patamona).

Tree 8-9 m high; inflorescence paniculate; flowers yellowish.

Use 1: Charm.

Preparation: The bark is soaked overnight in water and drunk before embarking on a hunting trip, as a charm for successful hunting of the savanna deer.

Use 2: Emetic.

Preparation: The bark is boiled, and the water used as an emetic.

Dosage / Application: 300 ml is drunk.

Collection voucher: Tiwari 1937 9see 1513).

Family: Myrtaceae

Botanical name: *Calycolpus goetheanus* (DC.) Berg

Common name: gua-ba-yik (Patamona).

Tree 2 m high along trail in forest; flowers white; fruit green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75-150 ml is taken 2 times daily .

Use 2: Anti-dysenteric.

Preparation: The juice from young fruits is drunk as a treatment for dysentery.

Dosage / Application: 15-30 ml is taken 3 times daily.

Collection voucher: Tiwari 1927.

Botanical name: *Eugenia* sp.

Common name: tuk-pong-yik (Patamona).

Tree 3-4 m high; flowers pale-yellow; fruit a berry, green.

Use: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 300 ml is drunk 2 times daily.

Collection voucher: Tiwari 1942 (see 1469).

Botanical name: *Marlierea* cf. *summa* Mc Vaugh.

Common name: pea-cock-yik (Patamona).

Tree 2 m high in savanna; fruit a berry, green.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk for treating diarrhea.

Dosage / Application: 75 ml is taken 2-3 times daily.

Use 2: Anti-dysenteric.

Preparation: Young fruits are grated, and the juice drunk for as a treatment for dysentery.

Dosage / Application: 15-30 ml is taken 3 times daily.

Collection voucher: Tiwari 2175.

Botanical name: *Myrcia sylvatica* (G.W. Mey.) DC.

Common name: tuk-pong-yik (Patamona).

Shrub 2 m high; flowers creamish-yellow; fruit green.

Use: Anti-diarrheal.

Preparation: The bark and leaves are boiled, and the water drunk as a treatment for

diarrhea.

Dosage / Application: 150 ml is taken 2 times daily.

Collection voucher: Tiwari 1935.

Family: Passifloraceae

Botanical name: *Passiflora garckeii* Masters

Common name: ak-row-mang-yik (Patamona).

Climber; leaves alternate; fruit a berry, with numerous seeds.

Use: Tonic.

Preparation: The fruits are boiled and the water used as tonic.

Collection voucher: Tiwari 2208 (see 1612).

Family: Piperaceae

Botanical name: *Piper arboreum* Aubl.

Common name: why-you-yik (Patamona).

Shrub 3 m high; stem nodose; inflorescence spicate; fruit a drupe, about 15 mm long.

Use 1: Anti-arthritic.

Preparation: The leaves are heated and used as a band-aid around joints as a treatment for arthritis.

Use 2: Medicament for muscular aches and pain.

Preparation: The leaves are warmed and wrapped around the affected area as a treatment for aches and pains.

Dosage / Application: It is applied 2 times daily.

Use 3: Medicament for sprains.

Preparation: The leaves are warmed and wrapped around affected area as treatment for sprains.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2180 (see 1502).

Family: Poaceae

Botanical name: *Cymbopogon citratus* L.

Common name: wa-na-bui-mah-yik (Patamona).

Tufted grass in savanna.

Use 1: Anti-asthmatic.

Preparation: The leaves are boiled, and the water drunk as a treatment for asthma.

Dosage / Application: 300 ml is taken 2-3 times daily.

Use 2: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a treatment for fevers.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 3: Anti-viral.

Preparation: The leaves are boiled, and the water drunk as a treatment for influenza and viral infections.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 4: Beverage.

Preparation: The leaves are boiled, and the water used as beverage.

Use 5: Medicament for bronchitis.

Preparation: The leaves are boiled, and the water drunk as a treatment for bronchitis.

Dosage / Application: 150 ml is taken 3 times daily.

Use 6: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 150-300 ml is taken 3 times daily.

Use 7: Medicament for coughing.

Preparation: The leaves are boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 8: Medicament for tuberculosis.

Preparation: The leaves are boiled, and the water drunk as a treatment for tuberculosis.

Dosage / Application: 300 ml is taken 3 times daily.

Use 9: Tonic.

Preparation: The leaves are boiled, and the water and used as a tonic.

Dosage / Application: 150 ml is drunk daily.

Collection voucher: Tiwari 1948 (see 1826).

Family: Cyatheaceae

Botanical name: *Cyathea procera* (Willd.) Domin.

Common name: a-rau-dah-yaou-gou-yik (Patamona).

Spiny fern 2 m high alongside Kopinang River; sori arranged alongside margin on the lower surface of the frond.

Use: Medicament for whooping cough.

Preparation: Young shoots are boiled with water and drunk as a medication for whooping cough.

Dosage / Application: 75-150 ml of the decoction is taken daily.

Collection voucher: Tiwari 1928 (see 1588).

Family: Lomariopsidaceae

Botanical name: *Lomagramma* sp.

Common name: none.

Fern less than 0.5 m tall.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and the juice used for treating itching.

Use 2: Emollient.

Preparation: The leaves are macerated and used on hard boils and abscesses to bring them to a point.

Use 3: Medicament for sores.

Preparation: The leaves are macerated and used to treat sores.

Collection voucher: Tiwari 2188.

Family: Hymenophyllaceae

Botanical name: *Trichomanes arbuscula* Desv.

Common name: ma-ran-yik (Patamona)

Fern less than 1 m high in weedy patch.

Use 1: Anti-malarial

Preparation: The whole plant is boiled and the water drunk as a treatment for malarial infection.

Dosage / Application: 300 ml is taken 3 times daily.

Use 2: Anti-menorrhagic.

Preparation: The whole plant is boiled and the water drunk as a treatment for excessive bleeding during the menstrual cycle.

Dosage / Application: 300 ml taken 2 times daily over the period.

Collection voucher: Tiwari 1952.

Family: Rubiaceae

Botanical name: *Amaiouea* cf. *brevidentata* Steyerm.

Common name: mo-rey-ee-yik (Patamona).

Tree 15 m high in forest.

Use: Anti-helmintic.

Preparation: The inner bark is boiled with water and drunk as a treatment for intestinal worm infections.

Dosage / Application: 75 ml is taken at night for 3-5 nights.

The fruit is eaten for the same purpose.

Collection voucher: Tiwari 2202.

Botanical name: *Psychotria uliginosa* Swartz

Common name: ebe-moung-yik (Patamona).

Shrub 1m high; leaves opposite with stipules; inflorescence terminal; fruit a berry, green.

Use: "Evil-eye".

This plant is considered to be a very bad plant to handle, especially for young children. It is believed that if one touches this plant a bad omen will befall that individual. Hence everyone avoids this plant including adults.

Collection voucher: Tiwari 1934.

Botanical name: *Psychotria bahiensis* DC.

Common name: none.

Shrub 1 m high; flowers orange-red; fruit a berry, blue.

Use 1: Emollient.

Preparation: The leaves are warmed and used as an emollient.

Use 2: Medicament for fever.

Preparation: The leaves are macerated in water and used for washing the skin as treatment for high fevers.

Dosage / Application: Apply 2-3 times daily.

Collection voucher: Tiwari 1944.

Family: Simaroubaceae

Botanical name: *Simrouba amara* Aubl.

Common name: ya-ku-yik (Patamona).

Tree 5 m high in ravine; leaves compound.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled and the water drunk as a treatment for diarrhea.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Use 2: Anti-dysenteric.

Preparation: The bark is boiled and the water drunk as a treatment for dysentery.

Dosage / Application: 300 ml is taken 2-3 times daily.

Use 3: Anti-pyretic.

Preparation: The bark and leaves are boiled, and the water drunk as a treatment for fever.

Dosage / Application: 75 ml is taken 3 times daily.

Collection voucher: Tiwari 2177 (see 1698).

Family: Smilacaceae

Botanical name: *Smilax lasseriana* Steyerm.

Common name: none.

Liana in forest; leaves alternate, simple.

Use 1: Medicament for back pain.

Preparation: The dried roots are boiled, and the water drunk as treatment for back pain.

Use 2: Medicament for impotence.

Preparation: The whole plant is boiled, and the water drunk as a treatment for impotence.

Dosage / Application: 300 ml is taken 2 times daily.

Use 3: Tonic.

Preparation: The dry roots are ground into a powder and used for making a tonic.

Dosage / Application: 75 ml is taken 2-3 times daily.

Collection voucher: Tiwari 1940 (see 1609).

Family: Solanaceae

Botanical name: *Brunfelsia guianensis* Benth.

Common name: taik-gau-yik, ah-rou-mang-yik (Patamona).

Shrub 1-1.5 m high; flowers white; fruit a berry.

Use 1: Anti-pyretic.

Preparation: The leaves are macerated in water, boiled, and used for treating high fevers.

Dosage / Application: 75 ml is taken 2 times daily.

Use 2: Herbal bath.

Preparation: The whole plant is boiled, and the water used for an herbal bath.

Use 3: Medicament for cold sweat.

Preparation: The leaves are macerated, boiled, and used as a treatment for cold sweat.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 1943.

Brunfelsamidine, derived from the root bark of *Brunfelsia grandiflora* subsp. *schultesii*, is toxic to livestock and can cause convulsions (Buckingham, 1998). Other alkaloids from this genus are brunfelsine and manacinne.

Botanical name: *Solanum crinitum* Lam.

Common name: pa-ru-mak-yik (Patamona).

Shrub 1 m high; leaves lobed, armed with spines; flowers lavender; fruit a berry.

Use 1: Antibacterial.

Preparation: The roots are boiled, and the water used as an antibacterial agent.

Dosage / Application: 75 ml is taken 2-3 times daily.

Use 2: Anti-malarial.

Preparation: The roots are boiled and the water drunk as a treatment for malarial infections.

Dosage / Application: 75-150 ml is taken 3 times daily.

Use 3: Antiseptic.

Preparation: The roots are boiled and the water used as a mouthwash.

Use 4: Medicament for toothache.

Preparation: The roots are boiled and the water for treating toothache.

Dosage / Application: The decoction is gargled as often as required.

Collection voucher: Tiwari 2197 (see 1473).

Botanical name: *Solanum scandens* Kunth

Common name: wung-yik (Patamona).

Shrub 1-2 m high; fruit a berry, green.

Use: Anti-inflammatory agent.

Preparation: Fruits and roots are boiled, and the water drunk as a treatment for inflammation.

Dosage / Application: 150-300 ml is taken 2 times daily.

Collection voucher: Tiwari 2182 (see 1473).

Botanical name: *Solanum stramonifolium* Jacq.

Common name: ah-ma-na-yik (Patamona).

Shrub 2 m high in savanna; flowers lavender.

Use 1: Anti-malarial.

Preparation: The roots are boiled, lime juice added, and drunk as a treatment for malarial infection.

Dosage / Application: 300 ml is taken 3 times daily.

Use 2: Medicament for "bush yaws".

Preparation: The fruits and leaves are boiled and the water used for washing persistent sores for rapid healing.

Dosage / Application: It is applied 2-3 times daily until the sore heals.

The pulp of the fruit is also used for treating bush yaws.

Dosage / Application: As above as often as possible.

Use 3: Medicament for sores.

Preparation: The fruits and leaves are boiled, and the water used for washing sores for rapid healing.

Dosage / Application: As above 2-3 times daily.

Collection voucher: Tiwari 1919 (see 1473).

Botanical name: *Solanum subinerme* Jacq.

Common name: ka-ta-lo-na-yik (Patamona).

Shrub about 2 m high in savanna; leaves lobed, with spines; fruit a berry, globose, green.

Use: Medicament for "bush-yaws".

The fruits are used as poultice for treating persistent sores.

Collection voucher: Tiwari 1908 (see 1473).

Botanical name: *Solanum* sp.

Common name: muk-ru-go-raie-yik (Patamona).

Shrub 1 m high; stem beset with hairs; leaves with thorns, lobed.

Use: Medicament for intestinal cramps.

Preparation: The roots are boiled and the water drunk for intestinal cramps.

Dosage / Application: 75-150 ml is taken as necessary.

Collection voucher: Tiwari 2198 (see 1473).

Family: Turneraceae

Botanical name: *Piriqueta cistoides* (L.) Griseb.

Common name: none.

Herb 2 m high in weedy patch; flowers orange.

Use 1: Anti-pyretic.

Preparation: The leaves are macerated in water and drunk as a treatment for fevers.

Dosage / Application: 30 ml is taken 2-3 times daily.

Use 2: Herbal bath.

Preparation: The leaves are macerated in water and used for an herbal bath.

Use 3: Medicament for cold sweat.

Preparation: The leaves are macerated in water and used for washing the skin as treatment for cold sweat.

Dosage / Application: As above 2-3 times daily.

Collection voucher: Tiwari 1920.

Family: Verbenaceae

Botanical name: *Stachytarpheta cayennensis* (L.C. Rich.) Vahl

Common name: ki-yah-wa-gai-ma-yik (Patamona)

Shrub about 1 m high in weedy patch; stem square.

Use 1: Antibacterial.

Preparation: The leaves are macerated and the juice applied to the affected area to treat bacterial infection.

Dosage / Application: As above 3 times daily.

Use 2: Anti-fungal.

Preparation: The leaves are macerated and the juice applied to the affected area to treat fungal infection.

Dosage / Application: As above 3 times daily.

Use 3: Anti-syphilitic.

Preparation: The latex is used for treating venereal diseases, especially syphilis.

Dosage / Application: It is applied indefinitely.

Use 4: Herbal bath

Preparation: The leaves are crushed, boiled, and the water used as an herbal bath.

Use 5: Medicament for chicken pox.

Preparation: The leaves are boiled, and the water used as a treatment for chicken pox.

Dosage / Application: As above 2-3 times daily.

Use 6: Medicament for measles.

Preparation: The leaves are macerated, boiled, and used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 1921.

Chapter 5

Medicinal Plants of Waipa

Waipa, a forest / riverine village located at 4 ° 55 N and 59 ° 59 W in the Potaro-Siparuni Region, was surveyed for its medicinal plants. During the survey 32 individuals were independently interviewed using the artifact / interviewed and the inventory / interviewed methods. Sixty families representing 37.98% of the families in the flora of the Region, 107 genera representing 13.61% of the genera in the Region, and 129 species representing 7.15% of the species in the Region are used. Eighty-eight medicinal use categories were identified. Fifteen species are used for treating colds, 14 species are used for treating sores, 15 species are used to treat fungal infections, 12 species are used to treat coughing, 13 species are anti-pyretic, 10 species are used for treating cuts and wounds, 9 species are used to treat "bush yaws", a type of sore that resists healing, and 9 species are used to treat measles. The plant part, method of preparation and dosage / applications are described below. Appendix 8 details of medicinal use categories and the percent species in each family used for medicinal purposes at Waipa

Family: Acanthaceae.

Botanical name: *Justicia calycina* (Nees) V.W. Graham

Common name: none.

Herb 1 m high; flowers pale yellow.

Use 1: Antibacterial / anti-infective.

Preparation: The leaves and young shoots are macerated and the juice used as a treatment for bacterial infections.

Dosage / Application: It is applied as necessary.

Use 2: Anti-dermatosis.

Preparation: The whole plant is macerated, and the juice used as a treatment for skin conditions.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for eczema.

Preparation: The leaves are macerated and the juice used for treating eczema.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for ringworm.

Preparation: The leaves are macerated and the juice used for treating ringworm infection.

Dosage / Application: It is applied 3-4 times daily.

Use 5: Medicament for sores.

Preparation: The leaves are macerated and the juice used for treating sores.

Dosage / Application: It is applied 4 times daily.

Collection voucher: Tiwari 2145.

Family: Anacardiaceae

Botanical name: *Anacardium occidentale* L.

Common name: a-roik-yik (Patamona).

Tree 30 m high; trunk straight, diameter 35-36 cm; bark 8-10 mm thick, gray-brown, rough, longitudinally fissured, with ranalean odor.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled with water and drunk as treatment for diarrhea.

Dosage / Application: 75 ml is drunk 3 times daily.

Use 2: Medicament for influenza.

Preparation: The bark is boiled with water and drunk as medication for influenza.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Collection voucher: Tiwari 2018 (see 1684).

Botanical name: *Anacardium occidentale* L.

Common name: yo-ro-yik (Patamona).

Tree 4 m high; flowers pinkish.

Use 1: Anti-dermatosis.

Preparation: The bark and leaves are macerated, and the juice used as a treatment for skin conditions.

Dosage / Application: It is applied 4 times daily.

Use 2: Anti-fungal.

Preparation: The inner bark is macerated, and the juice used as an anti-fungal agent.

Dosage / Application: It is applied 3 times daily.

Use 3: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a treatment for reducing fevers.

Dosage / Application: 75-150 ml is drunk 2 times daily.

Use 4: Anti-venom.

Preparation: The seed is ground into a powder, and used as a poultice for treating snakebite.

Use 5: Medicament for muscular aches and pains.

Preparation: The leaves are boiled, and the water drunk as a treatment for aches and pains.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 6: Medicament for sores.

Preparation: The inner bark is macerated and the juice used for treating sores.

Dosage / Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 2143 (see 1684).

Botanical name: *Astronium ulei* Mattick.

Common name: war-gang-yik (Patamona).

Tree 40 m high; trunk straight, diameter 40-42 cm; bark 8-10 mm thick, reddish-brown, rough, flaky, with strong fragrant somewhat aromatic odor; inner bark light brown; wood straight vein, soft.

Use 1: Anti-asthmatic.

Preparation: The inner bark and leaves are boiled, and the water drunk as a treatment for asthma..

Dosage / Application: 150 ml is taken 2 times daily.

Use 2: Anti-pyretic.

Preparation: The inner bark is boiled, and the water drunk for reducing fevers.

Dosage / Application: 75-150 ml is taken 3 times daily.

Use 3: Charm for hunting.

Preparation: The inner bark is macerated in water, left overnight, and drunk as a charm for hunting game.

Dosage / Application: 300-600 ml is drunk.

Use 4: Herbal bath.

Preparation: The inner bark and leaves are macerated in water and used for an herbal bath.

Use 5: Medicament for colds.

Preparation: The inner bark is boiled, and the water drunk as a treatment for coughing.

Also, the inner bark is chewed as a medication for colds.

Dosage / Application: 75-150 ml is taken 2-3 times daily.

Use 6: Tonic.

Preparation: The bark is boiled with sugar and used as a tonic.

Collection voucher: Tiwari 2046.

Family: Annonaceae

Botanical name: *Anaxagorea dolichocarpa* Sprague

Common name: none

Tree 15 m high; fruit cauliflorous, green turning purplish.

Use: Fish poison.

Preparation: The bark and leaves are macerated and used as a fish poison.

Collection voucher: Tiwari 2035 (see 1523).

Botanical name: *Annona hypoglauca* Mart.

Common name: jay-laik-yik (Patamona).

Tree 12-14 m high; trunk bent, bulbous, diameter 12-15 cm; lenticels longitudinal; bark 3-4 mm thick, gray-black, somewhat flaky, no latex, with a ranalean odor; inner bark yellowish; wood straight veined, yellowish white, hard leaves alternate.

Use 1: Medicament for diabetes.

Preparation: The leaves are boiled, and the water drunk as a treatment for diabetes.

Dosage / Application: 30 ml is taken daily.

Use 2: Medicament for hypertension.

Preparation: The bark and leaves are boiled, and the water drunk as a treatment to lower the blood pressure.

Dosage / Application: 75 ml is taken daily for 4-5 days.

Collection voucher: Tiwari 1991, 1992.

A variant, (R)-form of the alkaloid asimilobine are obtained from *Annona* (Buckingham, 1998).

Botanical name: *Duguetia cauliflora* R.E. Fries

Common name: none.

Tree 4-5 m high in forest understorey; fruit syncarpous, greenish-yellow; each monocarp with spine.

Use 1: Analgesic.

Preparation: The inner bark is macerated, boiled or soaked with water and drunk as an analgesic.

Dosage / Application: 150 ml is taken 2 times daily.

Use 2: Medicament for colds.

Preparation: The bark is boiled, and the water drunk as a treatment for colds.

Dosage / Application: 150 ml is taken 3 times daily.

Use 3: Medicament for coughing.

Preparation: The bark is boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 150 ml is taken 3 times daily.

Collection voucher: Tiwari 2029.

Botanical name: *Duguetia cauliflora* R. E. Fries

Common name: wey-o-yik (Patamona).

Tree 5 m high; fruit syncarpous.

Use 1: Anti-malarial.

Preparation: The bark is boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: 150-300 ml is taken 2-3 times daily.

Use 2: Medicament for colds.

Preparation: The inner bark is boiled with water and drunk as a treatment for colds.

Dosage / Application: 150 ml is taken 2 times daily.

Also, the fresh inner bark is chewed.

Use 3: Medicament for coughing.

Preparation: The inner bark is boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 150 ml is taken 2 times daily.

Collection voucher: Tiwari 2045.

Casagrande and Ferrari (1970) reported the three alkaloids, norglaucine, 9, 10-dimethoxy-7-hydroxy 1-2- methylenedioxyaporphine(duguetine) and an (-)enantiomer of dicentrine, isolated from a Brazilian *Duguetia* species.

Botanical name: Oxandra sp.

Common name: none.

Liana in canopy with aerial roots; lenticels scattered; bark 2-4(5) mm thick, gray-brown, ringed, rough, with a fragrant odor; wood hard.

Use 1: Anti-infective.

Preparation: The wood is boiled and the water drunk as a treatment for infections.

Dosage / Application: 75 ml is drunk 2 times daily.

Use 2: Antiseptic.

Preparation: The wood is boiled, and the water used as an antiseptic.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for wounds.

Preparation: The wood is boiled, and the water used to treat cuts and wounds.

Dosage / Application: It is used as required.

Collection voucher: Tiwari 1998.

Botanical name: *Unonopsis rufescens* (Baill.) R.E. Fries

Common name: kha-ra-ie-yik (Patamona).

Tree 15 m high; trunk slightly bent, diameter 15-16 cm; bark 3-4 mm thick, gray-black, with a strong aromatic odor; fruit green, turning black.

Use 1: Medicament for bronchitis.

Preparation: The inner bark is boiled with water and drunk as a treatment for bronchitis.

Dosage / Application: 75 ml is taken daily.

Use 2: Medicament for rheumatism.

Preparation: The bark is macerated in water, boiled, and drunk as a treatment for rheumatism.

Dosage / Application: 75 ml is taken 2 times daily.

Collection voucher: Tiwari 2021.

Family: Apiaceae

Botanical name: *Eryngium foetidum* L.

Common name: none.

Herb about 1 m high.

Use 1: Anti-malarial.

Preparation: The whole plant is boiled, and the water drunk as a treatment for malarial infections.

Dosage / Application: 150 ml is taken 3 times daily.

Use 2: Medicament for whooping cough.

Preparation: The whole plant is boiled, and the water drunk as a treatment for whooping cough.

Dosage / Application: 150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2129 (see 1817 and 1823).

Family: Apocynaceae

Botanical name: *Aspidosperma album* (Vahl) R. Ben.

Common name: pu-ray-gah-yik (Patamona).

Tree 23-24 m high; trunk bent, fenestrated /furrowed, diameter 25-26(27) cm; bark 2-3(4) mm thick, gray-green, with white latex; wood straight veined, creamish, hard; leaves spirally arranged, simple, entire.

Use 1: Anti-fungal.

Preparation: The inner bark is macerated and applied as a treatment for ringworm infection.

Dosage / Application: It is applied 2-3 times daily.

Use 2: Anti-inflammatory.

Preparation: The inner bark is boiled, and the water drunk as a treatment for inflammation.

Dosage / Application: 150 ml is taken 2 times daily.

Use 3: Anti-malarial.

Preparation: The inner bark is boiled, and the water drunk as medication for malarial fevers.

Dosage / Application: 75-150 ml is taken 3 times daily.

Use 4: Anti-pruritic.

Preparation: The bark is macerated and the juice used for treating itching.

Dosage / Application: It is applied as necessary.

Use 5: Antiseptic.

Preparation: The latex is mixed with water and used as an antiseptic.

Dosage / Application: It is used as necessary.

Use 6: Medicament for eczema.

Preparation: The bark is macerated and the juice used for treating eczema.

Dosage / Application: It is applied as required.

Use 7: Medicament for eye infections.

Preparation: The bark is macerated and the juice used to treat eye infections.

Dosage / Application: 1-2 drops are applied to the eye as necessary.

Use 8: Medicament for sores.

Preparation: The latex is used to treat sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 1994 (see 1413).

Botanical name: *Aspidosperma excelsum* Benth.

Common name: none.

Tree 39 m high; trunk fenestrated, diameter 80-85 cm; bark 1-3 mm thick, grey, longitudinally fissured, rough with a watery exudate / resin.

Use: Anti-fungal.

Preparation: The inner bark is macerated and the juice used as a treatment for fungal infection.

Dosage / Application: It is applied as required.

Collection voucher: Tiwari 1997 (see 1413).

Botanical name: *Himatanthus articulatus* (Vahl) Woods.

Common name: weck-qui-yik (Patamona).

Tree 6 m high; trunk straight; bark 2-4 mm, dark gray almost black, rough with white latex and scattered lenticels; wood whitish, straight veined.

Use: Anti-malarial.

Preparation: The latex is drunk as a treatment for malarial infection.

Dosage / Application: 15 ml is taken 3 times daily.

Collection voucher: Tiwari 1957 (see 1470).

Botanical name: *Himatanthus bracteatus* (A.DC.) Woods.

Common name: eb-bui-goui-yik (Patamona).

Tree 7-8 m high with white latex; leaves spirally arranged; inflorescence terminal, white; fruit apocarpous; mericarps cylindrical, diverging, woody.

Use 1: Anti-fungal.

Preparation: The latex is used as a treatment for fungal infection.

Use 2: Anti-malarial.

Preparation: The latex is drunk as a treatment for malarial infection.

Dosage / Application: 15 ml is drunk 2-3 times daily.

Use 3: Anti-pruritic.

Preparation: The latex is used as a treatment for itching.

Collection voucher: Tiwari 2083 (see 1470).

Family: Araceae

Botanical name: *Anthurium pentaphyllum* (Aubl.) G. Don

Common name: chi-mo-ru-gue-yik (Patamona).

Epiphyte; leaves broad.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and the juice used to treat itching.

Dosage / Application: It is applied 3-4 times daily.

Use 2: Medicament for "bush yaws".

Preparation: The leaves are macerated and the juice used for treating persistent sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2160 (see 1747).

Botanical name: *Anthurium roraimense* N.E. Brown

Common name: si-ma-ru-gu-ray-yik (Patamona).

Epiphyte on Mora tree; leaves net-veined.

Use 1: Emollient.

Preparation: The leaves are heated and tied to infected areas of the skin as a poultice to soften the area, especially where hard boils and swelling are present.

Dosage / Application: It is applied 2 times daily.

Use 2: Medicament for "bush-yaws".

Preparation: The sap is used as an ointment for treating persistent sores.

Dosage / Application: It is applied as often as possible.

Collection voucher: Tiwari 1968 (see 1747).

Botanical name: *Rhodospatha cuspidatum* Schott

Common name: tuk-ku-ey-yik (Patamona).

Epiphyte.

Use: Medicament for scorpion and other insect stings; anti-histimine.

Sap from the cut end is applied to stings to ease the pain and to effect rapid healing.

Collection voucher: Tiwari 2163.

Family: Araliaceae

Botanical name: *Didymopanax morototoni* Decne & Planch.

Common name: pau-na-yik (Patamona).

Tree 5 m high, fruit in panicles, yellow.

Use 1: Anti-fungal.

Preparation: The inner bark is macerated and the juice used for treating ringworm infection.

Dosage / Application: It is applied as necessary.

Use 2: Anti-pruritic.

Preparation: The bark is boiled, and the water used to treat itching.

Dosage / Application: It is applied to the affected area as necessary.

Use 3: Emollient.

Preparation: Sap from bark is used for treating hard boils and abscesses. It brings the infection to a point so that the pus can be squeezed out.

Use 4: Medicament for ringworm.

Preparation: The bark and leaves are macerated, and the juice used as a treatment for

ringworm infection.

Dosage / Application: It is applied 3–4 times daily.

Use 5: Medicament for sores.

Preparation: The bark and leaves are macerated and the juice used as a treatment for sores.

Dosage / Application: It is applied 3 times daily indefinitely.

Collection voucher: Tiwari 2124.

Family: Arecaceae

Botanical name: *Bactris gasipaes* Mart.

Common name: parippe (dialect not known).

Spiny, clumped palm in forest; fruit a berry.

Use 1: Anti-pyretic.

Preparation: The fruits are boiled, and the water drunk as a treatment for reducing fevers.

Dosage / Application: 75 ml is drunk 2 times daily.

Use 2: Antiseptic.

Preparation: The fruits are boiled, and the water used as an antiseptic.

Use 3: Herbal bath.

Preparation: The fruits are boiled, and the water used as an herbal bath.

Dosage / Application: It is applied 2 times daily.

Use 4: Medicament for influenza.

Preparation: The fruits are boiled, and the water drunk as a treatment for influenza.

Dosage / Application: 75 ml is drunk 3 times daily.

Collection voucher: Tiwari 2130, 2131.

Botanical name: *Euterpe precatoria* Mart.

Common name: wa-si-yik (Patamona).

Solitary palm, unarmed, 20 m high; fruit drupaceous, globose.

Use 1: Anti-malarial.

Preparation: The roots are boiled, and the water drunk for treating malarial infections.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 2: Medicament for whooping cough.

Preparation: The roots are boiled, and the water drunk for treating whooping cough.

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 2153.

Family: Aristolochiaceae

Botanical name: *Aristolochia hians* Willd.

Common name: pau-zu-ma-yik (Patamona).

Vine with a pungent odor.

Use 1: Anti-diarrheal.

Preparation: The vine is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 150-300 ml is drunk 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The vine is boiled, and the water drunk as a treatment for dysentery.

Dosage / Application: 300 ml is drunk 2 times daily.

Use 3: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 150 ml is drunk 2 times daily.

Use 4: Medicament for coughing.

Preparation: The leaves are boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2159 (see 1475A).

Family: Ascomycetes

Botanical name: Unknown.

Common name: ku-ruh-gu-yik (Patamona).

Brown, soft, umbrella-like mushroom growing on rotten logs.

Use: Tonic.

Preparation: The plant is boiled, and the water used as a tonic.

Collection voucher: Tiwari 2117.

Family: Asteraceae

Botanical name: *Ageratum conyzoides* L.

Common name: kha-wha-kui-ma-yik (Patamona)

Herb 1 m high.

Use 1: Herbal bath

Preparation: The whole plant is boiled along with *Lantana camara*, *Gossypium barbadense* and *Scoparia dulcis*, and the water used as an herbal bath.

Use 2: Medicament for chicken pox.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage / Application: It is applied 2 times daily.

Use 3: Medicament for measles.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2161.

Ageratochromene (procoene II) from this plant is used as an anti-allotropin agent. Its derivative 6-Ethoxy-7-methoxy-2, 2-dimethyl-2H-1-benzopyran (procoene III), an oil, is the most potent procoene analogue (Buckingham, 1998).

Botanical name: *Baccharis varians* Gardner

Common name: none

Herb less than 1 m high; flowers off-white.

Use: Medicament for fresh colds.

Preparation: The whole plant is boiled, and the water drunk as a treatment for runny nose.

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 2136 (see 1784).

Botanical name: *Bidens cynapiifolia* H.B.K.

Common name: wa-ra-ma-dang-yik (Patamona).

Herb about 20-25 cm high; flowers yellow.

Use: Medicament for back pain

Preparation: The whole plant is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 300 ml is taken 2-3 times daily.

Collection voucher: Tiwari 2057.

Botanical name: *Chaptalia integerrima* (Vell.) Burkart

Common name: none.

Herb; flowers yellow.

Use 1: Anti-infective.

Preparation: The whole plant is macerated, and the juice is used as an anti-infective agent.

Use 2: Anti-malarial.

Preparation: The plant is boiled along with *Cyperus*, and the water is drunk for treating malarial infection.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 3: Medicament for flushing the kidneys.

Preparation: The whole plant is boiled, and the water drunk to cleanse the kidneys.

Dosage / Application: 300 ml is drunk 3 daily for 3–4 days.

Collection voucher: Tiwari 2147.

Botanical name: *Ichthyothere terminalis* (Spreng.) Blake

Common name: wha-gow-yik (Patamona).

Herb 1-2 m high; flowers white.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and used as a treatment for itching.

Use 2: Antiseptic.

Preparation: The leaves are boiled, and the water used as an antiseptic agent.

Use 3: Herbal bath.

Preparation: The leaves are macerated in water and used as an herbal bath.

Use 4: Medicament for chicken pox.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage / Application: It is applied 2-3 times daily.

Use 5: Medicament for eczema / eczema

Preparation: The leaves are macerated and the juice used for treating eczema.

Dosage / Application: It is applied 3 times daily.

Use 6: Medicament for herpes.

Preparation: The leaves are macerated and the juice used for treating genital herpes.

Dosage / Application: It is applied 3 times daily.

Use 7: Medicament for measles.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2-3 times daily.

Use 8: Medicament for sores.

Preparation: The leaves are boiled, and the water used as a treatment for sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2077.

Ichthyothereol, its variant(-)-form (C₁₄H₁₄O₂) and its Ac-derivative (C₁₆H₁₆O₃) are among eighteen compounds isolated from *I. terminalis*. C₁₄H₁₄O₂ and C₁₆H₁₆O₃ are ichthyotoxins but C₁₆H₁₆O₃ is a potent convulsive agent (Buckingham, 1998).

Botanical name: *Pterocaulon virgatum* (L.) DC.

Common name: tu-kok-yik (Patamona).

Shrub 1 m high; flowers white.

Use 1: Anti-fungal.

Preparation: The leaves are macerated and used as a treatment for fungal infection.

Dosage / Application: It is applied 2-3 times daily.

Use 2: Medicament for athlete's foot.

Preparation: Juice from the macerated leaves is warmed and used to treat athlete's foot ("ground itch"). It is very effective.

Dosage / Application: It is applied 2 times daily for 3 days.

Collection voucher: Tiwari 2072.

Botanical name: *Wedelia fruticosa* Jacq.

Common name: suk-yik (Patamona).

Herb; flowers yellow.

Use 1: Anti-malarial.

Preparation: The whole plant is boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: 300 ml is drunk 3 times daily indefinitely.

Use 2: Medicament for fresh colds (a cold with a runny nose).

Preparation: The whole plant is boiled, and the water drunk as a treatment for fresh colds.

Dosage / Application: 150 ml is drunk 2 times daily indefinitely.

Use 3: Medicament for coughing.

Preparation: The whole plant is boiled, and the water drunk as a treatment for fresh coughing.

Dosage / Application: 150 ml is drunk 2 times daily indefinitely.

Collection voucher: Tiwari 2060, 2101.

Family: Bignoniaceae

Botanical name: *Arrabidaea patellifera* (Schlechtend.) Sandw.

Common name: pak-rah-su-gu-yik (Patamona).

Liana; leaves 2-foliolate; fruit a capsule.

Use: Medicament for sore eyes.

The root is macerated and the juice used as a treatment for sore eyes.

Dosage / Application: 1-2 drops is applied to the eye 2 times daily.

Collection voucher: Tiwari 2162.

Botanical name: *Jacaranda obtusifolia* Humb. & Bonpl.

Common name: pa-sa-yik (Patamona)

Tree 20 m high; trunk straight, somewhat bulbous, diameter 16-18 cm; bark 2-3 (4) mm thick, gray, no latex, with a sweetish odor; wood white, straight veined, soft; leaves opposite and compound; bipinnate.

Use 1: Anti-infective.

Preparation: The young leaves are macerated, the juice slightly warmed and used as an anti-infective agent.

Use 2: Medicament for "bush-yaws".

Preparation: The young leaves are macerated and the juice applied to persistent sores.

Dosage / Application: It is applied 2-3 times daily.

Use 3: Medicament for cuts and bruises.

Preparation: The young leaves are macerated and the juice applied as a treatment to cuts and bruises.

Collection voucher: Tiwari 1976 (see 1731).

Family: Boraginaceae

Botanical name: *Cordia nodosa* Lam.

Common name: ta-go-ro-ka-yik (Patamona).

Shrub 3 m high; leaves alternate, simple, entire; twigs strigose, with ant domatia; fruit a drupe, strigose, green.

Use 1: Medicament for dribbling (drooling).

The fruits are given to babies to suckle as a treatment for dribbling.

Use 2: Tonic.

Preparation: The leaves are boiled, and the water drunk as a tonic.

Collection voucher: Tiwari 1973, 2062 (see 1751).

Family: Burseraceae

Botanical name: *Protium sagotianum* March.

Common name: chi-bo-yik (Patamona).

Tree 20-22 m high with small buttress; trunk bent, bulbous, diameter 30-32 cm; lenticels scattered; bark 3-5 mm thick, gray, ringed, with strong aromatic odor; inner bark whitish; wood straight veined, creamish white, hard; leaves alternate, imparipinnate, leaflets opposite, entire.

Use 1: Anti-diarrheal.

Preparation: The gum is chewed or ground, mixed with water, and drunk as medication for diarrhea.

Dosage / Application: 150 ml is drunk 2-3 times daily.

Use 2: Antihistamine.

Preparation: The gum is ground, mixed with water, and used as antihistamine.

Dosage / Application: 150 ml is taken 3 times daily.

Use 3: Anti-ulcerigenic (stomach).

Preparation: The resin is ground, mixed with water, and drunk as medication for an ulcerated stomach.

Dosage / Application: 150 ml is taken 3 times daily.

Use 4: Decongestant.

Preparation: The resin is used as a decongestant to clear the nasal passages and sinuses especially when one is suffering from a severe cold or fever.

Dosage / Application: It is ground into a powder and used as an inhaler.

Use 5: Incense.

Preparation: The wood is burned as incense sticks.

Collection voucher: Tiwari 2002, 2011, 2039.

Botanical name: *Protium sagotianum* March.

Common name: chi-bo-yik, ma-wa-ri-yik (Patamona).

Tree 20-21 m high; trunk slightly bent, diameter 14-17 cm; lenticels scattered; bark 2-4 mm thick, greenish-gray, ringed, with strong aromatic odor; inner bark creamish; wood straight veined, pale yellow; leaves alternate, imparipinnate, leaflets opposite, entire.

Use 1: Anti-diarrheal.

Preparation: The gum is chewed or ground, mixed with water, and drunk as a treatment for diarrhea.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 2: Decongestant.

Preparation: The resin is inhaled to clear the nasal passages especially when one is suffering from a severe cold or fever.

Use 3: Incense.

Preparation: The wood is burned as incense sticks.

Use 4: Medicament for bronchitis.

Preparation: The gum is chewed or ground, mixed with water, and drunk as a treatment for bronchitis.

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 2009.

Botanical name: *Tetragastris altissima* (Aubl.) Swartz

Common name: ma-warie-yik, chi-bo-yik (Patamona).

Tree 30 m high; trunk straight, diameter 32-33 cm; bark 5-6 mm thick, gray-black,

with a pungent aromatic odor.

Use 1: Anti-diarrheal.

Preparation: The resin is chewed as medication for diarrhea, or the resin is ground, mixed with water, and drunk as a treatment for diarrhea.

Dosage / Application: 150-300 ml is drunk 2 times daily.

Use 2: Anti-ulcerogenic.

Preparation: The resin is ground, mixed with water, and drunk as a treatment for stomach ulcers. The resin is also chewed as a treatment for stomach ulcers.

Dosage / Application: 75 ml is drunk 3 times daily.

Collection voucher: Tiwari 2026.

Botanical name: *Trattinickia burserifolia* Mart.

Common name: ma-wa-ri-yik (Patamona).

Tree 20 m high with small buttress; trunk bent, bulbous, diameter 12-13 cm; lenticels scattered; bark 2-4(5) mm thick, gray, ringed, with strong aromatic odor; inner bark yellow; wood straight veined, yellowish-cream, hard; leaves alternate, imparipinnate, leaflets opposite, entire.

Use 1: Anti-diarrheal.

Preparation: The gum is chewed or ground, mixed with water, and drunk as a treatment for diarrhea.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 2: Decongestant.

Preparation: The resin is inhaled to clear the nasal passages, especially when one is suffering from a severe cold or fever.

Use 3: Incense.

Preparation: The wood is burned as incense sticks.

Use 4: Medicament for bronchitis.

Preparation: The gum is chewed or ground, mixed with water, and drunk as a treatment for bronchitis..

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 1987, 2005.

Botanical name: *Trattinickia rhoifolia* Willd.

Common name: ma-wa-ri-yik (Patamona).

Tree 10-11 m high; trunk straight, diameter 18-19 cm; bark with a very fragrant, aromatic odor.

Use 1: Anti-addictive.

Preparation: The resin from the bark is mixed with water and drunk as a treatment for addiction.

Dosage / Application: 150 ml is taken 3 times daily.

Use 2: Anti-depressant.

Preparation: The resin from the bark is mixed with water and drunk as a treatment for

depression.

Dosage / Application: 150 ml is taken 3 times daily.

Use 3: Charm for "evil-eyes".

Preparation: The bark is mixed with water and used for breaking an "evil-eye" spell

Dosage / Application: 75 ml is taken 2 times daily. for 2-3 days.

Collection voucher: Tiwari 2047.

Family: Caesalpiniaceae

Botanical name: *Bauhinia guianensis* Aubl.

Common name: kha-woui-en-gu-pouii-yik (Patamona).

Woody liana; leaves 2-foliolate, coriaceous, abaxially ferrugineous-tomentose; fruit a small, flat pod, clavate, brown.

Use 1: Anti-diarrheal.

Preparation: The wood is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75-150 ml is taken 2 times daily.

Use 2: Anti-dysenteric for bloody dysentery.

Preparation: The wood is boiled, and the water drunk as a treatment for bloody dysentery.

Dosage / Application: 150-300 ml is taken 2 times daily.

Collection voucher: Tiwari 2049.

Botanical name: *Bauhinia rubiginosa* Bong.

Common name: kha-woui-eng-gu-puii-yik (Patamona).

Woody liana with tendrils; leaves 2-foliolate.

Use 1: Anti-diarrheal.

Preparation: The wood is boiled, and the water drunk as a treatment for diarrhea. It is very bitter.

Dosage / Application: 150-300 ml is taken 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The wood is boiled, and the water drunk as a treatment for dysentery.

Dosage / Application: 300 ml is taken 3 times daily.

Collection voucher: Tiwari 1985, 2038.

Botanical name: *Bauhinia scala-simiae* Sandw.

Common name: kha-woui-yeng-gu-ma-pui-yik (Patamona).

Woody liana with tendrils; stem ladder-like; leaves 2-foliolate.

Use 1: Anti-diarrheal.

Preparation: The wood is boiled, and the water drunk as a remedy for diarrhea.

Dosage / Application: 75-150 mls taken 1-2 times daily depending on the severity of the infection.

Use 2: Anti-dysenteric.

Preparation: The wood is boiled, and the water drunk as a remedy for bloody dysentery.

Dosage / Application: 150-300 ml is drunk 1-2 times daily.

Collection voucher: Tiwari 2107.

Botanical name: *Bauhinia surinamensis* Amsh.

Common name: kha-woui-eng-gu-ma-pui-yik (Patamona).

Liana in forest canopy; stem flat; leaves 2-foliolate.

Use 1: Anti-diarrheal

Preparation: The wood is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75-150 ml is drunk 1-2 times daily.

Use 2: Anti-dysenteric for bloody dysentery.

Preparation: The wood is boiled, and the water drunk as a treatment for dysentery.

Dosage / Application: 150-300 ml is drunk 1-2 times daily depending on the severity of the infection.

Collection voucher: Tiwari 2109.

Botanical name: *Cassia apoucoutia* Aubl.

Common name: none.

Shrub along trail; leaves compound; with large stipules; fruit a pod.

Use 1: Analgesic

Preparation: Seeds are crushed into a powder, mixed with water, and drunk as a treatment to relieve pains.

Dosage / Application: 150 ml is drunk 2-3 times daily or as required.

Use 2: Anti-venom

Preparation: Seeds are crushed into a powder, and used to treat snakebite.

Dosage / Application: The powder is applied to the affected area as required.

Use 3: Medicament for toothache

Preparation: Seeds are crushed into a powder, and inserted into cavities as a treatment for toothache.

Dosage / Application: Apply as necessary.

Collection voucher: Tiwari 2068 (see 1725).

Botanical name: *Mora excelsa* Benth.

Common name: tho-ro-yik (Patamona).

Tree 40 m high, buttressed; crown dense; trunk straight, diameter 55-56 cm; bark 10-12 mm thick, grayish-brown; leaves paripinnate, glabrous, coriaceous; inflorescence paniculate; fruit a flat, oblong pod, brown.

Use: Anti-diarrheal.

Preparation: The bark is either boiled or mixed with water and drunk to stop diarrhea.

Dosage / Application: 350 ml is 2 times daily for 2-3 days.

Collection voucher: Tiwari 1954 (see 1745).

Family: Cannaceae

Botanical name: *Canna indica* L.

Common name: none.

Herb 1 m high; flowers with red bracts.

Use 1: Anti-dermatosis.

Preparation: The leaves and powdered seeds are mixed, and used as a treatment for skin conditions.

Dosage / Application: It is applied 3 times daily.

Use 2: Anti-infective.

Preparation: The seeds are ground into a powder, and used as an anti-infective agent.

Dosage / Application: It is applied 3 times daily.

Use 3: Anti-pruritic.

Preparation: The seeds are crushed into a powder and used for treating itching.

Dosage / Application: It is applied 2 times daily.

Use 4: Medicament for "bush yaws".

Preparation: The seeds are ground into a powder, and used as a treatment for persistent sores.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: Seeds are ground into a powder, and used as a poultice for treating sores.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2134 (see 1911).

Family: Caricaceae

Botanical name: *Carica papaya* L.

Common name: ma-pa-ya-yik (Patamona).

Tree 5 m high with white latex; fruit a berry, green.

Use 1: Anti-diarrheal.

Preparation: The root is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75 ml is drunk as necessary.

Use 2: Antihelmintic.

Preparation: The root is boiled, and the water drunk as a treatment for intestinal worm infection.

Dosage / Application: 15 ml is taken 2 times daily for 5 days.

Collection voucher: Tiwari 2123 (see 1546)

Family: Caryophyllaceae

Botanical name: *Drymaria cordata* (L.) Willd.

Common name: ka-ri-ma-tak-yik (Patamona).

Vine in forest.

Use: Medicament for colds.

Preparation: The plant is boiled, and the water drunk as a medication for colds, or the plant is chewed for the same reason.

Collection voucher: Tiwari 2165.

4-methpxycanthin-6-one, an alkaloid, is obtained from this plant (Buckingham, 1998).

Botanical name: *Drymaria* sp.

Common name: none.

Shrub in moist places; flowers white.

Use 1: Anti-malarial.

Preparation: Whole plant is boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: 300 ml is taken 2 times daily.

Use 2: Diuretic.

Preparation: The whole plant is boiled, and the water drunk as a diuretic.

Dosage / Application: 150 ml is taken daily.

Use 3: Medicament for biliousness.

Preparation: The whole plant is boiled, and the water drunk as a treatment for biliousness.

Dosage / Application: 150-300 ml is taken daily.

Use 4: Medicament for jaundice.

Preparation: The leaves are boiled, and the water used for treating jaundice.

Dosage / Application: 75 ml is drunk 2 times daily.

Collection voucher: Tiwari 2056.

Atractyligenone, and a derivative of atractyligenin is obtained from *D. arenarioides* (Buckingham, 1998).

Family: Cecropiaceae

Botanical name: *Cecropia obtusa* Trec.

Common name: ka-ma-ying-yik (Patamona).

Tree with hollow trunk.

Use 1: Glue.

Preparation: The roots are macerated and used as a paste.

Use 2: Medicament for back pain.

Preparation: The dried leaves are boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 75-150 ml is drunk 2-3 times daily.

Collection voucher: Tiwari 2120.

Family: Chenopodiaceae

Botanical name: *Chenopodium ambrosioides* L.

Common name: matrush (Patamona).

Herb 1 m high; flowers whitish.

Use 1: Anti-pruritic.

Preparation: The blossoms are macerated, and used as a treatment for itching.

Dosage / Application: It is applied 3 times daily.

Use 2: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a treatment for reducing

fevers.

Dosage / Application: 150-300 ml is drunk 2 times daily.

Use 3: Herbal bath.

Preparation: The whole plant is macerated in water and used for an herbal bath.

Use 4: Medicament for "bush yaws".

Preparation: The leaves and blossoms are macerated, mixed with a pinch of salt, and used as a poultice for treating persistent sores.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a remedy for colds.

Dosage / Application: 150-300 ml is drunk 3 times daily.

Collection voucher: Tiwari 2125 (see 1809).

Family: Clusiaceae

Botanical name: *Clusia grandiflora* Splitg.

Common name: nuu-yik (Patamona).

Liana with stilt roos; bark with white latex; fruit a capsule.

Use 1: Antiseptic.

Preparation: The latex is mixed with water and used as an antiseptic agent.

Use 2: Medicament for wounds.

Preparation: The latex from the bark is applied to wounds for healing

Collection voucher: Tiwari 2168 (see 1462).

Botanical name: *Clusia nemorosa* G.F.W.Mey.

Common name: mang-yik (Patamona).

Tree 4-5 m high; fruit a capsule.

Use 1: Antiseptic.

Preparation: The inner bark is macerated, mixed with a small amount of water and used as antiseptic.

Use 2: Medicament for cracked heels.

Preparation: The latex from the bark is used as a treatment for cracked heels.

Dosage / Application: It is applied as often as possible.

Use 3: Medicament for cuts and wounds.

Preparation: The inner bark is macerated, mixed with a small amount of water, and used as a treatment for cuts and wounds.

Dosage / Application: It is applied as often as possible.

Collection voucher: Tiwari 2098 (see 1462).

Botanical name: *Clusia nemorosa* G. Mey.

Common name: mang-yik (Patamona).

Liana in canopy of forest; bark with yellow latex; flowers pinkish-white; fruit a berry.

Use 1: Anti-dermatosis.

Preparation: The latex is used for treating skin infections.

Use 2: Antiseptic.

Preparation: The latex is mixed with water and used as an antiseptic agent.

Use 3: Medicament for "bush yaws".

Preparation: The latex is used to treat persistent sores.

Dosage / Application: It is applied indefinitely.

Use 4: Medicament for sores.

Preparation: The latex is used as a medication for sores.

Dosage / Application: It is applied as necessary.

Collection voucher: Tiwari 2031 (see 1462).

Botanical name: *Clusia* cf. *palmicida* L.C. Rich. ex Planch. & Triana

Common name: ka-ro-yik (Patamona).

Liana in canopy; bark with white latex.

Use: Anti-dysenteric.

Preparation: The bark is boiled with water and drunk as medication for dysentery.

Dosage / Application: 300 ml is taken 2 times daily.

Collection voucher: Tiwari 2027 (see 1462).

Botanical name: *Havetiopsis flavida* (Benth.) Planch. & Triana

Common name: mang-yik (Patamona).

Tree 6 m high; bark with whitish-cream latex; fruit a capsule, green.

Use 1: Antiseptic.

Preparation: The bark is macerated, the juice mixed with a little water, and used as an antiseptic.

Use 2: Medicament for cracked heels.

Preparation: The latex is used for treating cracked heels.

Use 3: Medicament for cuts and wounds.

Preparation: Latex from the bark is applied to cuts and wounds for healing.

Dosage / Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 2114, 2166.

Botanical name: *Vismia angusta* Miq.

Common name: wouy-wey-yik (Patamona).

Tree 20 m high, bark with orange-yellow latex; flowers pale yellow.

Use 1: Anti-fungal.

Preparation: The latex and inner bark are used for treating fungal infection of the skin.

Use 2: Anti-herpetic.

Preparation: The latex is used as a medicament for treating genital herpes.

Dosage / Application: It is applied 3 times daily.

Use 3: Anti-infective.

Preparation: The latex is used as an anti-infective agent.

Dosage / Application: It is used as required.

Use 4: Medicament for athlete's foot ("ground-itch").

Preparation: The latex is applied to athlete's foot as a treatment for healing.

Use 5: Medicament for eczema / dermatitis

Preparation: The latex is used as ointment for treating eczema.

Dosage / Application: It is applied 2 times daily.

Use 6: Medicament for ringworm.

Preparation: The latex is used as a medicament for ringworm infection.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 1977 (see1467)

Botanical name: *Vismia japurensis* Reich.

Common name: wa-ya-mac-yik (Patamona)

Tree 6 m high; bark with an orange-red latex; sterile.

Use 1: Anti-fungal.

The latex is used for treating ringworm.

Dosage / Application: Apply latex to infection 2-3 times daily.

Use 2: Medicament for genital herpes.

The latex is vigorously applied around the genital area to cure herpes.

Dosage / Application: It is applied as often as possible.

Collection voucher: Tiwari 1958 (See 1977).

Botanical name: *Vismia macrophylla* H.B.K.

Common name: why-ah-mac-yik (Patamona).

Tree 5 m high; flowers creamish-yellow; fruits green.

Use 1: Anti-diarrheal.

Preparation: The inner bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75 ml is drunk as necessary.

Use 2: Anti-herpetic.

Preparation: The inner bark is ground into powder inserted into the vagina as a treatment for genital herpes.

Dosage / Application: It is applied 2 times daily.

Use 3: Anti-syphilitic.

Preparation: The inner bark is ground and the powder inserted into the vagina as a treatment for syphilis.

Dosage / Application: It is applied 2 times daily.

Use 4: Medicament for yeast infection.

Preparation: The inner bark is macerated and used for treating yeast infection.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2093 (see 1977).

Family: Commelinaceae

Botanical name: *Commelina diffusa* Burm. f.

Common name: wha-gu-ma-yik (Patamona).

Spreading herb; flowers blue.

Use: Charm.

Preparation: The plant is boiled, and the water drunk as a charm for hunting the savanna deer.

Collection voucher: Tiwari 2170.

Flavocommelin and malonylawobanin are obtained from *Commelina communis* (Buckingham, 1998).

Family: Costaceae

Botanical name: *Costus arabicus* L.

Common name: ah-mam-rah-yik (Patamona).

Succulent herb 2 m tall; inflorescence red.

Use 1: Antibacterial.

Preparation: The stem and leaves are macerated, and the juice used as an antibacterial agent.

Use 2: Anti-infective.

Preparation: The stem and leaves are macerated, and the juice used as an anti-infective agent.

Use 3: Medicament for ear infection.

Preparation: The leaves are macerated, the juice slightly warmed, and used for treating ear infection.

Dosage / Application: 1-2 drops are applied 2 times daily.

Collection voucher: Tiwari 2061 (see 1589).

Botanical name: *Costus erythrothyrus* Loes.

Common name: ah-mam-rah-yik (Patamona).

Shrub 1 m high; inflorescence terminal; flowers pale pink.

Use 1: Anti-asthmatic.

Preparation: The leaves are boiled, and the water drunk as a treatment for asthma.

Dosage / Application: 150 ml is taken 2 times daily.

Use 2: Antibacterial.

Preparation: The leaves are boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 75 ml is taken 3 times daily.

Use 3: Anti-infective.

Preparation: The leaves are boiled, and the water used as an anti-infective agent.

Dosage / Application: 75 ml is taken 3 times daily, or it is used for washing the infected area.

Use 4: Medicament for colds.

Preparation: The plant is chewed as a treatment for colds.

Use 5: Medicament for coughing.

Preparation: The leaves are boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 150 ml is taken 2 times daily.

Use 6: Medicament for ear infection.

Preparation: The leaves are macerated, the juice slightly warmed, and used for treating ear infection.

Dosage / Application: 1-2 drops are applied 2 times daily.

Collection voucher: Tiwari 2058 (see 1589).

Family: Cucurbitaceae

Botanical name: *Momordica charantia* L.

Common name: none.

Vine in weedy patch of forest; flowers yellow.

Use 2: Anti-diabetic.

Preparation: The dry leaves and stems are boiled, and the water drunk as a treatment for diabetes.

Dosage / Application: 75 ml is taken 2 times daily for 7-10 days.

Use 1: Anti-hypertensive.

Preparation: The leaves are boiled, and the water drunk to reduce high blood pressure.

Dosage / Application: 150 ml is taken 2 times daily for 3-5 days.

Use 3: Anti-pruritic.

Preparation: The leaves are macerated and the juice used as a medication for itching.

Dosage / Application: It is applied to the infected area as required.

Use 4: Medicament for biliousness.

Preparation: The dried leaves and stems are boiled, and the water drunk as a treatment

for biliousness.

Dosage / Application: 75 ml is taken daily for 7 days.

Use 5: Medicament for hepatitis.

Preparation: Flowers and young leaves are boiled, and the water drunk as a medication for hepatitis.

Dosage / Application: 75 ml is taken 3 times daily.

Use 6: Tonic.

Preparation: The whole plant is boiled, and the water used as a tonic.

Collection voucher: Tiwari 2051(see 1538).

Family: Cyperaceae

Botanical name: *Bulbostylis paradoxa* (Spreng.) Lindm.

Common name: wha-pi-apu-yik (Patamona).

Sedge in savanna, less than 0.5 m high, inflorescence pale yellow.

Use 1: Antiseptic.

Preparation: The whole plant is boiled, and the water used as an antiseptic agent.

Use 2: Anti-venom.

Preparation: The plant is burnt and the ashes used as a treatment for snakebite.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for burns.

Preparation: The plant is burnt and the ash used as a treatment for burns.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2097.

Botanical name: *Rhynchospora barbata* (Vahl) Kunth

Common name: sa-laa-yik (Patamona).

Sedge in weedy patch; 1 m high; fruit brown.

Use 1: Anti-malarial.

Preparation: The whole plant boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: Dosage not known.

Use 2: Charm.

Preparation: The young plant is burnt with kha-ra-raik and ka-mo-wha, the ashes collected and applied to the cut end of the tongue (which has been cut with salaa leaf blade) as a charm for learning, especially language.

Collection voucher: Tiwari 2071.

Botanical name: *Rhynchospora barbata* (Vahl) Kunth

Common name: sa laa-yik (Patamona).

Sedge in savanna, less than 1 m high; inflorescence terminal; flowers yellow.

Use 1: Anti-infective.

Preparation: Ashes from the burnt plant are applied to the cut end of the umbilical cord to prevent infection.

Use 2: Anti-inflammatory.

Preparation: The whole plant is boiled, and the water drunk as a treatment for inflammation.

Dosage / Application: 75 ml is drunk 2 times daily.

Collection voucher: Tiwari 2089.

Botanical name: *Scleria arundinacea* Kunth

Common name: sa-laa-yik (Patamona).

Sedge 1-2 m high; fruit black.

Use 1: Anti-infective.

Preparation: The plant is burnt and the ashes used as an anti-infective agent.

Use 2: Medicament for cuts.

Preparation: Leaves and fruits are burnt and the ashes used for treating cuts.

Collection voucher: Tiwari 2156.

Family: Dilleniaceae

Botanical name: *Davilla kunthii* St. Hil.

Common name: ka-ta-waik-yik (Patamona).

Liana along forest margin; leaves scabrous, covered with trichomes.

Use: Antiseptic.

Preparation: The liana is boiled, and the water used as an antiseptic agent.

Collection voucher: Tiwari 2096.

Botanical name: *Davilla kunthii* St. Hil.

Common name: ka-ta-waik-yik (Patamona).

Climber along forest margin; fruit a berry, orange-yellow.

Use: Medicament for back pain.

The whole plant is boiled, and the water drunk as a treatment for back pain.

Dosage / Application: 300 ml is drunk 2-3 times daily.

Collection voucher: Tiwari 2139.

Family: Euphorbiaceae

Botanical name: *Micandra glabra* (R.E. Schultes) R.E. Schultes

Common name: none.

Tree 5 m high; trunk straight, diameter 12-14 cm; bark brown with thick white latex;
inflorescence panicle; fruit green.

Use 1: Poison.

Plant is poisonous.

Use 2: Skin Irritant.

The latex causes severe itching if allowed to fall on or touch the skin.

Collection voucher: Tiwari 2024.

Botanical name: *Ricinus communis* L.

Common name: cat-ah-roik-yik (Patamona).

Shrub 2-3 m high; fruit green.

Use 1: Analgesic.

Preparation: The leaves are boiled, and the water drunk as a treatment for reducing pain.

Dosage / Application: 75 ml is taken 2 times daily.

Use 2: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a treatment for reducing fevers.

Dosage / Application: 75 ml is drunk 1-2 times daily.

Use 3: Medicament for toothache.

Preparation: The dry seeds are crushed, mixed with the macerated, very young fruit, and inserted into cavities as a treatment for toothache.

Collection voucher: Tiwari 2140.

Family: Fabaceae

Botanical name: *Clathrotropis brachypetala* (Tul.) Kleinh.

Common name: ka-wo-ie-yik (Patamona).

Tree 25-26 m high; trunk straight, diameter 22-24 cm; lenticels scattered; bark 2-3(4) mm thick, brown, rough, fissured; inner bark yellowish; wood straight veined, hard.

Use: Medicament for "bush-yaws".

Preparation: The inner bark is macerated and the juice used as a treatment for persistent sores.

Dosage / Application: It is applied as often as possible.

Collection voucher: Tiwari 2001.

Alkaloids from seed extracts are poisonous to rats (Hatfield *et al.* 1980). Among the compounds isolated from this plant are cystisine, 5-dehydrolupanine, 11-allylcysticine, lupanine and anagyrine.

Botanical name: *Clathrotropis macrocarpa* Ducke

Common name: ka-woee-yik (Patamona).

Tree 23 m high in forest along trail; fruit a thick brown pod.

Use 1: Anti-puritic.

Preparation: The inner bark is macerated and the juice used as a medication for itching.

Dosage / Application: It is applied to the infected area as required.

Use 2: Medicament for "bush-yaws".

Preparation: The inner bark is macerated and the juice used as a medication for persistent sores.

Dosage / Application: It is applied to the infected area as required.

Use 3: Poison.

Preparation: The whole plant is used as a poison.

Collection voucher: Tiwari 2030 (see 2001).

Botanical name: *Crotalaria pilosa* Miller

Common name: none.

Herb; flowers yellow.

Use 1: Anti-herptic.

Preparation: The root is macerated and the juice applied around the groin as treatment for genital herpes.

Dosage / Application: Apply 3 times daily.

Use 2: Anti-syphilitic.

Preparation: The root is macerated, and the juice used as a treatment for syphilis.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2138.

Extracts from two other species *C. brevifolia* and *C. agathiflora* have shown hypotensive activity (Singh *et al.*, 1969; Sharma and Ghatak, 1971; Sharma *et al.*, 1967).

Botanical name: *Lonchocarpus floribundus* Benth.

Common name: black hiariri.

Liana; bark with a somewhat putrid odor; leaves alternate, imparipinnate, glabrous.

Use: Fish poison.

Preparation: The bark is macerated and used as fish poison.

Collection voucher: Tiwari 1970, 2076.

Botanical name: *Lonchocarpus* cf. *hedyosmus* Miq.

Common name: none.

Shrub about 4 m high; leaves imparipinnate; stipules free.

Use: Fish poison.

Preparation: The roots are macerated and used as a fish poison.

Collection voucher: Tiwari 2054.

Botanical name: *Mucuna urens* (L.) DC.

Common name: a-mo-go-yen-u-yik (Patamona).

Climber; leaves 3-foliolate; stipules free; fruit a pod, leathery, with stinging hairs.

Use: Skin irritant.

Hairs on the fruit causes severe itching on the skin.

Collection voucher: Tiwari 2074 (see 1931).

Family: Gentianaceae

Botanical name: *Irlbachia alata* Maas

Common name: why-ga-row-rai-yik (Patamona)

Shrub 1 m high; flowers yellow; fruit green.

Use 1: Laxative.

Preparation: The leaves are boiled, and the water drunk as a laxative.

Dosage / Application: 350 ml is drunk at night.

Use 2: Medicament for biliousness.

Preparation: The whole plant is boiled, and the water drunk as a treatment for biliousness.

Dosage / Application: 30 ml is drunk 2 times daily.

Use 3: Medicament for chicken pox.

Preparation: The leaves are macerated, boiled, and the water used for washing the skin

as a treatment for chicken pox.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for jaundice.

Preparation: The whole plant is boiled, and the water drunk as a treatment for jaundice.

Dosage / Application: 30 ml is drunk 2-3 times daily.

Use 5: Medicament for measles.

Preparation: The leaves are macerated, boiled, and the water used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 3 times daily.

Use 6: Medicament for ringworm.

Preparation: The leaves and stems are macerated and the juice used as a treatment for ringworm infection.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2111.

Botanical name: *Irlbachia purpurascens* (Aubl.) Maas

Common name: why-gou-rouw-rai-yik (Patamona).

Shrub 1 m high; leaves opposite; flowers lavender.

Use 1: Medicament for biliousness.

Preparation: The leaves are boiled, and the water drunk as a treatment for biliousness.

Dosage / Application: 30 ml is drunk 2 times daily for 5 days.

Use 2: Medicament for chicken pox.

Preparation: The leaves are macerated and applied to the skin as treatment for chicken pox.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for constipation / laxative.

Preparation: The leaves are boiled, and the water drunk as a treatment for constipation.

Dosage / Application: 300 ml is drunk in the night.

Use 4: Medicament for measles.

Preparation: The leaves are macerated and applied to the skin as treatment for measles.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2090.

Family: Gesneriaceae

Botanical name: *Besleria pendulifera* Fritsch.

Common name: oh-kui-ku-rik-yik (Patamona).

Herb along trail, 1 m high; leaves rough, serrated.

Use 1: Anti-venom.

Preparation: The leaves are macerated, wrapped in a leaf of the same plant, warmed and used for treating snakebite. It is strapped around the infected area.

Use 2: Emollient.

Preparation: The leaves are macerated, wrapped in a leaf of the same plant and used as

a poultice to bring hard boils to a point.

Collection voucher: Tiwari 2065.

Family: Iridaceae

Botanical name: *Cipura* sp.

Common name: ma-ri-ba-yik (Patamona).

Shrub less than 1 m high.

Use 1: Anti-arthritis.

Preparation: The bulb is grated and used for treating arthritic pains.

Dosage / Application: It is applied as a poultice.

Use 2: Medicament for muscular aches and pains.

Preparation: The bulb is grated and used for treating muscular aches and pains.

Dosage / Application: It is applied as a poultice.

Use 3: Medicament for sprains.

Preparation: The bulb is grated and used for treating sprains.

Dosage / Application: It is applied as a poultice.

Collection voucher: Tiwari 2135.

Family: Lamiaceae

Botanical name: *Hyptis parkeri* Benth.

Common name: wa-ra-tak-pu-ta-yik (Patamona).

Herb; flowers white.

Use: Medicament to strengthen bones.

The whole plant is macerated in the hands and used for massaging babies, especially limbs and joints, to make bones stronger.

Dosage / Application: It is applied 2 times daily indefinitely.

Collection voucher: Tiwari 2100.

Family: Lauraceae

Botanical name: *Ocotea guianensis* Aubl.

Common name: wha-da-krow-yik (Patamona).

Tree 15 m high; trunk straight, diameter 12-14 cm; bark 2-4 mm thick, gray, with a ranalean odor; leaves compound, alternate, the undersurface silvery.

Use 1: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk for reducing fevers.

Dosage / Application: 15 ml is taken 2-3 times daily.

Use 2: Medicament for cold sweat.

Preparation: The leaves are macerated, boiled with water, and used for washing the skin as a treatment for cold sweat.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 2040 (see 1409).

Botanical name: *Ocotea* sp.

Common name: ah-back-yik (Patamona).

Tree 8-9 m high; fruit a berry, green.

Use: Tonic.

Preparation: The leaves are boiled, and the water used as a tonic.

Collection voucher: Tiwari 2052 (see 1409).

Family: *Lecythidaceae*

Botanical name: *Eschweilera sagotiana* Miers

Common name: pah-gai-yik (Patamona).

Tree 20-22 m high; trunk straight, diameter 32-34 cm; bark 6-7 mm thick, grey; leaves alternate, simple, entire.

Use 1: Antiseptic.

Preparation: The bark is boiled, and the water used as an antiseptic agent.

Use 2: Emollient.

Preparation: The inner bark is warmed and use as a poultice for treating sores and hard boils.

Use 3: Medicament for burns.

Preparation: The inner bark is macerated and the juice used as a treatment for burns.

Dosage / Application: It is applied as required.

Use 4: Medicament for wounds.

Preparation: The inner bark is macerated and the juice used for treating cuts and wounds.

Collection voucher: Tiwari 2048 (see 1476).

Family: Loranthaceae

Botanical name: *Phthirusa retroflexa* (R. & P.) Kuijt

Common name: ah-da-bek-yik (Patamona).

Parasitic vine; flowers yellowish-white.

Use: Medicament for infertility and to prevent abortion.

Preparation: The whole plant is boiled, and the water drunk as a treatment for infertility, and to prevent spontaneous abortion in women up to 2.5 months pregnant.

Dosage / Application: 75-150 ml is taken daily.

Collection voucher: Tiwari 2091 (see 1450).

Botanical name: *Psittacanthus lasianthus* Sandw.

Common name: yah-bau-ga-yik (Patamona).

Parasitic vine in canopy; inflorescence paniculate; petals red with a yellow tip.

Use: Anti-malarial.

Preparation: The leaves are boiled, and the water drunk as medication for malarial infection.

Dosage / Application: 150-300 ml is taken 2 times daily.

Collection voucher: Tiwari 2023

Family: Malpighiaceae

Botanical name: *Byrsonima crassifolia* (L.) H.B.K.

Common name: uh-mum-le-bai-yik (Patamona).

Shrub 2-3 m high; inflorescence terminal; flowers yellow; fruit green.

Use 1: Anti-diarrheal.

Preparation: The inner bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75 ml is drunk 2 times daily.

Use 2: Anti-dysenteric.

Preparation: The inner bark is boiled, and the water drunk as a treatment for bloody dysentery.

Dosage / Application: 75-150 ml is drunk 2 times daily.

Use 3: Anti-infective.

Preparation: Brown powder from the undersurface of the leaf is applied onto the cut end of the umbilical cord to prevent infection.

Use 4: Anti-inflammatory.

Preparation: The inner bark is boiled, and the water drunk as a treatment for inflammation.

Dosage / Application: 150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2094, 2106 (see 1660).

Botanical name: *Byrsonima pachypoda* W.R. Anderson

Common name: ko-pey-tak-wha-yik (Patamona).

Shrub 2-3 m high; inflorescence terminal; flowers pale pink.

Use 1: Anti-diarrheal.

Preparation: The inner bark is boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75 ml is drunk 2 times daily.

Use 2: Anti-dysenteric for bloody dysentery.

Preparation: The inner bark is boiled, and the water drunk as a treatment for bloody dysentery.

Dosage / Application: 75-150 ml is taken 2 times daily.

Use 3: Medicament for colds.

Preparation: The inner bark is boiled, and the water drunk as a treatment for colds.

Dosage / Application: 15-30 ml is drunk 3 times daily for 5-6 days.

Use 4: Medicament for coughing.

Preparation: The inner bark is boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 15-30 ml is taken 3 times daily.

Collection voucher: Tiwari 2095 (see 1660).

Botanical name: *Byrsonima verbascifolia* (L.) DC.

Common name: why-king-ba-na-e-mu-yik (Patamona)

Shrub about 20 cm high in open savanna; stems short; inflorescence terminal, many-flowered, yellowish; fruit drupaceous, globose.

Use 1: Anti-menorrhagic.

Preparation: The leaves are boiled, and the water drunk as a treatment for excessive bleeding during the menstrual cycle.

Dosage / Application: 300 ml is drunk in the morning.

Use 2: Charm.

Preparation: The leaves are boiled, and the water drunk as a charm for hunting savanna deer.

Dosage / Application: 300-600 ml is drunk in morning of the hunt.

Use 3: Medicament for intestinal cramps.

Preparation: The leaves are boiled, and the water drunk as a treatment for cramps during the menstrual cycle.

Dosage / Application: 150-300 ml is drunk 2-3 times a day over the period.

Collection voucher: Tiwari 2084 (see 1660).

Botanical name: *Stigmaphyllon fulgens* (Lam.) A. Juss.

Common name: ma-ko-yik (Patamona).

Liana along forest margin.

Use 1: Anti-pyretic.

Preparation: The whole plant is boiled, and the water used as a treatment for reducing fevers.

Dosage / Application: 150 ml is drunk 2 times daily.

Use 2: Herbal bath.

Preparation: The whole plant is boiled, and the water used for an herbal bath.

Use 3: Medicament for cold sweat.

Preparation: The whole plant is boiled, and the water used for washing the skin as a treatment for cold sweat.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2127.

Botanical name: *Stigmaphyllon sinuatum* (DC.) Adr. Juss.

Common name: ma-ko-yik (Patamona).

Liana; leaves opposite, cordate.

Use 1: Anti-pyretic.

Preparation: The liana is boiled, and the water as a treatment for reducing fevers.

Dosage / Application: Also 30 ml is drunk 3 times daily.

Use 2: Medicament for cold sweat.

Preparation: The liana is boiled, and the water used for washing the skin as a treatment for cold sweat.

Collection voucher: Tiwari 2059.

Family: Malvaceae

Botanical name: *Gossypium barbadense* L.

Common name: ka-da-quack-yik (Patamona).

Shrub 2 m high; leaves broadly ovate, deeply lobed; flowers yellow.

Use 1: Anti-pruritic.

Preparation: The leaves are macerated and juice used for treating itching.

Dosage / Application: It is applied 3-4 times daily.

Use 2: Medicament for "bush yaws".

Preparation: The leaves are macerated, the juice warmed, and used as a treatment for persistent sores.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for thrush.

Preparation: The seeds are crushed, and the juice given to babies as a treatment for thrush.

Dosage / Application: 2-3 drops is administered 2 times daily for 3 days.

Collection voucher: Tiwari 2132.

Verpoorte and Dihal (1987) reported antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Asperigillus niger*, and *Candida albicans* using extract from *Gossypium barbadense*.

Botanical name: *Pavonia fruticosa* (Willd.) Fawc. & Rendle

Common name: ka-da-qua-du-rai-yik (Patamona).

Herb less than 1 m high; flowers orange-red.

Use 1: Anti-pyretic.

Preparation: The whole plant, and the water is drunk as a treatment for reducing fevers.

Use 2: Herbal bath.

Preparation: The leaves are macerated in water and used for an herbal bath.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 3: Medicament for chicken pox.

Preparation: Whole plant is boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage / Application: It is applied 2-3 times daily.

Use 4: Medicament for eczema.

Preparation: The leaves are macerated and the juice is used for treating eczema.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for measles.

Preparation: Whole plant is boiled, and the water used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 2128.

Family: Melastomataceae

Botanical name: *Ernestia glandulosa* Gleason

Common name: none.

Shrub; fruit a drupe, green.

Use: Medicament for coughing.

Preparation: The fruits are chewed as a remedy for coughing.

Collection voucher: Tiwari 2164.

Botanical name: *Loreya mespiloides* Miq.

Common name: ah-pang-yik (Patamona).

Tree 10-12 m high; trunk bent, bulbous, diameter 10-12 cm; bark 1-2(3) mm thick, yellowish-green, flaky, longitudinally fissured, with a fragrant odor; inner bark yellowish; wood yellowish, straight veined, hard.

Use 1: Antibacterial.

Preparation: The bark and leaves are macerated and the juice used as a treatment for bacterial infection.

Dosage / Application: It is applied as necessary.

Use 2: Anti-infective.

Preparation: Juice from the bark is used as an anti-infective agent on babies' umbilical cord.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 1990, 1996, 1999.

Botanical name: *Miconia alata* (Aubl.) DC.

Common name: none.

Shrub 1 m high; fruit a berry, green.

Use: Medicament for coughing.

Fruits are chewed as a remedy for coughing.

Collection voucher: Tiwari 2157.

2-methoxy-6-pentyl-1, 4-benzoquinone, miconidin and 3-episumaresinolic acid are obtained from *Miconia* sp. miconidin exhibited anti-microbial properties and is used as an antifeedant for insects (Buckingham, 1998).

Botanical name: *Mouriri huberi* Cogn.

Common name: jah-gali-yik (Patamona).

Tree 25-26 m high; trunk straight, diameter 20-21 cm; bark 2-4 mm thick, gray, no latex, no odor; leaves opposite; wood sample taken.

Use: Tonic.

Preparation: The fruits are used for making a tonic.

Collection voucher: Tiwari 1978.

Family: Meliaceae

Botanical name: *Carapa guianensis* Aubl.

Common name: ka-ra-ba-yik (Patamona).

Tree 20 m high; crown wide; trunk straight, diameter 14-15 cm diameter; bark 2-4 mm thick, grayish covered with moss, reddish on the inside with a somewhat aromatic smell; wood reddish, straight veined; leaves alternate, pinnate.

Use 1: Insect repellant / insecticide.

Preparation: The seeds are ground and the juice used as insect repellant, especially for Kabowra flies.

Use 2: Medicament for chicken pox.

Preparation: The bark is macerated, left overnight in water and used for washing the skin as a treatment for chicken pox.

Dosage / Application: It is applied 2-3 times daily.

Use 3: Medicament for eczema.

Preparation: The bark is macerated and the juice is used for treating eczema.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for measles.

The bark is macerated, left overnight in water, and used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 1962 (see 1504).

Family: Menispermaceae

Botanical name: *Cissampelos pareira* L.

Common name: a-gu-wing-yik (Patamona).

Liana along trail in forest.

Use 1: Anti-conjunctivitis.

Preparation: The leaves and stem are macerated, the juice mixed with a little water, and used as a treatment for conjunctivitis.

Dosage / Application: 1 drop is applied to the affected eye as needed.

Use 2: Anti-infective.

Preparation: The leaves and stem are macerated in water and used as an anti-infective agent.

Use 3: Anti-inflammatory.

Preparation: The leaves and stem are macerated, and the juice used to treat inflammation

Dosage / Application: 15-30 ml is drunk 2 times daily.

Use 4: Medicament for sore eye.

Preparation: The leaves and stem are macerated, the juice mixed with little water, and used as a treatment for sore eyes.

Dosage / Application: 1 drop is applied to the affected eye as needed.

Collection voucher: Tiwari 2070.

Xiao Peigen (1991) reported the use of extracts of *C. pareira* as a muscle relaxant.

Among the main constituents of the extract are hyatine, hyatinine, and hyatidine cissampreine. Norimeluteine, an alkaloid from the root and wood extract is cytotoxic to P388 cell line (Buckingham, 1998).

Botanical name: *Orthomene schomburgkii* Barneby ex Krukoff

Common name: why-la-ling-bi-yik (Patamona).

Woody liana; bark with a pungent smell; leaves trifoliate.

Use: Poison.

Preparation: Leaves, bark, and stem are macerated and used as a poison, especially for hunting armadillo.

Collection voucher: Tiwari 1967.

Family: Mimosaceae

Botanical name: *Abarema jupunba* (Willd.) Britton & Killip

Common name: tuc-cu-nang-yik (Patamona).

Tree 15 m high; fruit a curved, orange-red pod.

Use 1: Detergent.

Preparation: The leaves and inner bark are macerated and used as a detergent.

Use 2: Medicament for itchy and scaling scalp.

Preparation: The leaves and inner bark are macerated and used as a treatment for itchy and scaling scalp.

Dosage / Application: It is applied as necessary.

Use 3: Shampoo.

Preparation: The bark is macerated and used as a shampoo.

Dosage / Application: It is applied as required.

Collection voucher: Tiwari 2121.

Botanical name: *Indigofera* sp.

Common name: none.

Shrub 1 m high; fruit a pod, green.

Use: Dye.

Preparation: Dry seeds are boiled with water until the liquid is viscous and then used as

a dye.

Use 2: Insecticide.

Preparation: The whole plant is boiled, and the water used as an insecticide.

Collection voucher: Tiwari 2137.

Xiao Piegin (1981) reported indirubine from the leaf extract of *I. suffruticosa* is used in the treatment of leukemia.

Botanical name: *Mimosa somnians* H. & B. ex Willd.

Common name: ah-mo-rong-yik (Patamona).

Shrub 1-2 m high; flowers pale pink.

Use 1: Anti-irritant.

Preparation: The plant is boiled, and the water used to bathe irritable young children and calm them down.

Use 2: Charm .

Preparation: Footprints are covered with the leaves of this plant as a charm for hunting tapir.

Collection voucher: Tiwari 2119.

Botanical name: *Pentaclethra macroloba* (Willd.) O. Kuntze

Common name: a-wa-ri-gaik-yik (Patamona).

Tree 20 m high; crown somewhat dense; trunk straight, diameter 20-21 mm; bark 1-3 mm thick, grayish with longitudinal fissures; leaves large, leaflets numerous, glabrous;

fruit a pod, falcate, somewhat erect.

Use 1: Antiseptic.

Preparation: The bark is boiled, and the water used as an antiseptic agent.

Use 2: Medicament for cuts and wounds.

Preparation: Juice from the bark is applied on to cuts and bruises to stop bleeding.

Collection voucher: 1956 (see 1506).

Family: Moraceae

Botanical name: *Brosimum* cf. *lactescens* (S. Moore) C. Berg

Common name: pui-yik (Patamona)

Tree 28-29 m high; trunk straight, diameter 30-31 cm; bark 2-4 mm thick, grayish-brown, ringed, flaky, longitudinally fissured, with white latex; leaves alternate, distichous, simple; wood straight veined, yellow, hard.

Use 1: Medicament for colds.

Preparation: The latex is drunk as a remedy for persistent colds.

Dosage / Application: 15 ml is taken 3 times daily.

Use 2: Medicament for coughing.

Preparation: The latex is drunk as remedy for persistent coughing.

Dosage / Application: 15-30 ml is drunk 3 times daily.

Collection voucher: Tiwari 2000 (see 1405).

Botanical name: *Brosimum utile* (H.B.K.) Pittier

Common name: pui-yik (Patamona)

Tree 10-12 m high; trunk straight, diameter 10-12 cm; bark 2-3 mm thick, gray with profuse white latex; sterile; leaves alternate, distichous, simple; wood sample taken.

Use 1: Analgesic.

Preparation: The latex is drunk as a treatment for pain.

Dosage / Application: 15 ml is taken 3 times daily.

Use 2: Medicament for colds.

Preparation: The latex is drunk as a treatment for colds.

Dosage / Application: 15 ml is taken 2 times daily.

Use 3: Medicament for whooping cough.

Preparation: The latex is drunk as a treatment for whooping cough.

Dosage / Application: 15 ml is taken 3 times daily.

Collection voucher: Tiwari 1961 (see 1405).

Botanical name: *Pourouma cecropiaefolia* Mart.

Common name: mik-wa-yik (Patamona).

Tree 20-21 m high with a low buttress and stilt roots; bark 2-3 mm, gray, ringed, with a rather putrid smell; wood pale yellow, straight veined, soft.

Use: Emollient.

Preparation: The bark is warmed and used as a poultice for hard boils.

Collection voucher: Tiwari 1960.

Family: Myristaceae

Botanical name: *Virola sebifera* Aubl.

Common name: ili-ga-wa-yik (Patamona).

Tree 30 m high; trunk straight, diameter

20-22 cm; bark 2-4 mm thick, gray-black with longitudinal cracks and slight reddish

latex; wood straight vein, soft; leaves alternate, simple and entire.

Use 1: Analgesic for cracked heels.

Preparation: Juice from the bark is applied to cracked heels for healing.

Dosage / Application: It is applied as often as possible.

Use 2: Charm for "evil-eyes".

Preparation: The bark is soaked in water and used for bathing to break an "evil-eye" spell.

Use 3: Emetic.

Preparation: The bark is soaked overnight in water and drunk to induce vomiting.

Dosage / Application: 300-600 ml is drunk.

Use 4: Stimulant.

Preparation: The bark is boiled, and the water drunk as a stimulant.

Dosage / Application: 300 ml is taken 2 times daily.

Collection voucher: Tiwari 1959.

Family: Myrtaceae

Botanical name: *Calypttranthes pulchella* DC.

Common name: pea-kok-yik (Patamona).

Shrub 1-2 m high; fruit a berry.

Use 1: Anti-diarrheal.

Preparation: The bark is boiled, and the water drunk as a medication for diarrhea.

Dosage / Application: 150 ml is drunk 3 times daily.

Use 2: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 150-300 ml is drunk 2 times daily.

Collection voucher: Tiwari 2105

Botanical name: *Calypranthes pullei* Buret ex Amsh.

Common name: wik-wha-yik (Patamona).

Tree 5 m high; flowers white; fruit green.

Use 1: Medicament for cut and wounds.

Preparation: The bark is macerated and the juice used for treating cuts and wounds.

Dosage / Application: It is applied as necessary.

Use 2: Medicament for "lotta" (a skin infection).

Preparation: The inner bark is macerated and the juice used for treating discolored rashes.

Dosage / Application: It is applied 3-4 times daily indefinitely.

Use 3: Medicament for ringworm.

Preparation: The inner bark is macerated and the juice used for treating ringworm.

Dosage / Application: It is applied 3–4 times daily.

Collection voucher: Tiwari 2110.

Botanical name: *Eugenia anastomosans* DC.

Common name: gua-ba-yik (Patamona).

Tree 4 m high; fruit a berry, green.

Use 1: Anti-diarrheal.

Preparation: The bark and leaves are boiled, and the water drunk as a treatment for diarrhea.

Dosage / Application: 75–150 ml is drunk 3 times daily.

Use 2: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a medication for colds.

Dosage / Application: 125 ml is drunk 2 times daily.

Collection voucher: Tiwari 2122 (see 1469).

Botanical name: *Eugenia tafelbergica* Amsh.

Common name: mi-gam-be-me-yu-yik (Patamona).

Tree 1 m high in savanna; fruit a berry, red.

Use: Medicament for colds.

Preparation: The leaves are boiled, and the water drunk as a treatment for colds.

Dosage / Application: 150–300 ml is drunk 2 times daily.

Collection voucher: Tiwari 2085 (see 1469).

Botanical name: *Myrciaria amazonica* O. Berg

Common name: wick-wha-yik (Patamona).

Tree 15 m high; fruit brown.

Use 1: Anti-dermatosis.

Preparation: The inner bark is boiled, and the water used for treating skin infections.

Dosage / Application: It is applied to the infected area 3-4 times daily.

Use 2: Anti-fungal.

Preparation: The inner bark is macerated and the juice used for treating fungal infections.

Dosage / Application: It is applied as necessary.

Use 3: Antiseptic.

Preparation: The inner bark and leaves are boiled, and the water used as an antiseptic agent.

Use 4: Medicament for sores.

Preparation: The bark is macerated and the juice used for treating sores.

Dosage / Application: As above 3 times daily.

Collection voucher: Tiwari 2037.

Botanical name: *Psidium guineense* Sw.

Common name: peg-kok-yik (Patamona).

Shrub 3-4 m high in savanna; flowers white; fruit a berry, green.

Use: Medicament for coughing.

Preparation: The leaves are boiled, and the water drunk as a treatment for coughing.

Dosage / Application: 75-150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2080.

Family: Papavaraceae

Botanical name: *Argemone* sp.

Common name: ma-ri-ma-yik (Patamona).

Shrub in weedy patch.

Use: Medicament for toothache.

Preparation: Sap from the cut end of the stem is applied to cavities as a treatment for toothache.

Collection voucher: Tiwari 2167.

Petroleum ether and ethanolic extracts of *Argemone mexicana* demonstrated antibacterial activity when *in vitro* assayed against human pathogens, *Escherichia coli*, *Bacillus subtilis* and *Streptococcus faecalis* (Saxena and Vyas, 1986).

Family: Passifloraceae

Botanical name: *Passiflora* sp.

Common name: man-bi-du-na-yik (Patamona).

Liana in canopy; fruit a berry.

Use: Emollient.

Preparation: Leaves are macerated and used as an emollient agent.

Collection voucher: Tiwari 2063 (see 1612).

Botanical name: *Passiflora vespertilio* L.

Common name: none.

Climber along trail in forest; fruit a berry, brownish-red.

Use 1: Anti-infective.

Preparation: The leaves and stems are macerated, the juice mixed with a little water and used as an anti-infective agent. (probably antibacterial).

Dosage / Application: 75 ml is drunk 2 times daily.

Use 2: Anti-inflammatory.

Preparation: The leaves and stem are macerated, the juice mixed with water and used for treating inflammation.

Dosage / Application: 15 ml is drunk 2 times daily.

Use 3: Medicament for sore eyes.

Preparation: Leaves and stems are macerated, the juice mixed with a little water, and used for treating eye infection.

Dosage / Application: 1-2 drops are applied to the eye 2 times daily.

Collection voucher: Tiwari 2069 (see 1612).

Family: Piperaceae

Botanical name: *Piper acutifolium* R. & P.

Common name: why-you-yik (Patamona).

Shrub 1 m high; stem nodose; inflorescence spicate, creamish-yellow, less than 15 cm long.

Use: Medicament for muscular aches and pains.

Preparation: The leaves are warmed and strapped to affected area as a treatment for aches and pains.

Collection voucher: Tiwari 2075 (see 1502).

Botanical name: *Piper hostmannianum* (Miq.) C. DC.

Common name: e-gou-i-pou-yik (Patamona).

Shrub 2 m high; stem nodose; fruit a spike, 45 cm long

Use 1: Analgesic.

Preparation: The leaves are warmed and strapped around the affected area as treatment for pain.

Dosage / Application: It is applied as necessary.

Use 2: Anti-arthritic.

Preparation: The leaves are macerated, warmed and strapped around the affected area as treatment for arthritic pains.

Dosage / Application: It is applied as necessary.

Use 3: Medicament for muscular aches and pains.

Preparation: The leaves are warmed and used as a poultice for treating muscular aches and pains.

Dosage / Application: It is used as necessary.

Collection voucher: Tiwari 2016 (see 1502).

Botanical name: *Piper lancifolia* Hook.

Common name: why-yu-yik (Patamona).

Shrub 1-2 m high; stem nodose; inflorescence spicate; fruit green, very small.

Use: Medicament for muscular aches and pains.

Preparation: The leaves are macerated, and strapped around the affected area as a treatment for muscular aches and pains.

Collection voucher: Tiwari 2078 (see 1502).

Botanical name: *Piper obliquum* Ruiz & Pavon

Common name: wha-you-yik (Patamona), cow-foot.

Shrub 2-3 m high; stem nodose; fruit a spike, 20 cm long.

Use 1: Analgesic.

Preparation: The leaves are warmed and strapped around the affected area as a treatment for pain.

Dosage / Application: It is applied as necessary.

Use 2: Anti-arthritis.

Preparation: The leaves are warmed and wrapped around the affected area for relieving arthritic pain.

Dosage / Application: It is applied as required.

Use 3: Medicament for muscular aches and pains.

Preparation: The leaves are warmed and used as a poultice for treating muscular aches and pains.

Dosage / Application: It is used as necessary.

Collection voucher: Tiwari 2015 (see 1502).

Botanical name: *Piper rupununianum* Trel. & Yunck.

Common name: whey-you-yik (Patamona).

Shrub along trail, 2 m high; stem nodose; inflorescence a spike, 2-3 cm long.

Use 1: Analgesic.

Preparation: The leaves are warmed and strapped around joints to relieve pain.

Use 2: Medicament for muscular aches and pains.

Preparation: The leaves are warmed and strapped around joints to relieve pain.

Collection voucher: Tiwari 2064 (see 1502).

Family: Poaceae

Botanical name: *Oplismenus* sp.

Common name: ah-tu-ko-mey-rey-yik (Patamona).

Grass in savanna.

Use 1: Antibacterial.

Preparation: The root is ground into a powder, mixed with water and drunk as a treatment for bacterial infection.

Dosage / Application: 150 ml is drunk 2 times daily.

Use 2: Anti-diarrheal.

Preparation: The root is ground into a powder, mixed with water and drunk as a treatment for diarrhea.

Dosage / Application: 150 ml is drunk as necessary.

Use 3: Anti-infective.

Preparation: The whole plant is ground into a powder, and used as an anti-infective agent.

Use 4: Anti-inflammatory.

Preparation: The whole plant is ground in a powder, dissolved in water, and drunk as a treatment for inflammation.

Dosage / Application: 75 ml is drunk 2-3 times daily.

Use 5: Medicament for coughing.

Preparation: The root is ground into a powder, mixed with water and drunk as a treatment for coughing.

Dosage / Application: 75 ml is drunk 3 times daily.

Use 6: Medicament for sore throat.

Preparation: The root is ground into a powder, mixed with water and drunk as a treatment for sore throat.

Dosage / Application: 75 ml is drunk 3 times daily.

Collection voucher: Tiwari 2092.

Family: Cyatheaceae

Botanical name: *Cyathea procera* (Willd.) Domin

Common name: ah-row-da-yah-gu-yik (Patamona).

Spiny, solitary fern along bank of river.

Use: Medicament for whooping cough.

Preparation: The young shoot is boiled, and the water drunk as a treatment for whooping cough.

Dosage / Application: 150-300 ml is drunk 2-3 times daily.

Collection voucher: Tiwari 2146, 2150, 2157 (see 1588).

Family: Dennstaedtiaceae

Botanical name: *Pteridium aquilinum* L.

Common name: kam-baik-yik (Patamona).

Fern in weedy burnt-out patch of woods.

Use 1: Anti-infective.

Preparation: Young shoots are macerated, and the juice used as an anti-infective agent.

Dosage / Application: It is applied 3 times daily.

Use 2: Antiseptic.

Preparation: The plant is boiled, and the water used as an antiseptic agent.

Use 3: Medicament for cold sweat.

Preparation: The whole plant is boiled along with *Lantana camara* and *Scoparia dulcis*,

and the water used as an herbal bath.

Use 4: Medicament for cuts and wounds.

Preparation: Young shoots are macerated, and the juice used for treating cuts and wounds.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: Young shoots are macerated, and the juice used for treating sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2142, 2148 (see 1457).

Family: Rubiaceae

Botanical name: *Genipa spruceana* Steyerm.

Common name: kha-ruk-yik (Patamona).

Tree 6 m high; leaves opposite; wood sample taken.

Use 1: Anti-dermatosis.

Preparation: The young fruit is used for treating skin conditions such as dry skin

Dosage / Application: It is applied as above.

Use 2: Anti-fungal.

Preparation: The young fruits are crushed and used as a treatment for fungal infection.

Dosage / Application: It is applied 3-4 times daily.

Use 3: Dye.

Preparation: The mature fruits (pulp) are used for making tattoo.

Use 4: Insecticide.

Preparation: The leaves and young fruits are crushed and used as insecticide.

Use 5: Medicament for eczema.

Preparation: The young fruit is cut in halves and used for treating eczema.

Dosage / Application: It is applied 3-4 times daily.

Use 6: Medicament for ringworm.

Preparation: The young fruit is cut in halves and used for treating ringworm infection.

Dosage / Application: It is vigorously applied to the infection as necessary.

Use 6: Medicament for sun burn.

Preparation: The pulp of mature fruits is used for treating sun burn.

Dosage / Application: It is applied as required.

Collection voucher: Tiwari 2104 (see 1586).

Botanical name: *Palicourea guianensis* Aubl.

Common name: whe-lu-vey-yik (Patamona).

Shrub 2-3 m high; inflorescence terminal; corolla, yellow; fruit a berry, black.

Use 1: Medicament for muscular aches and pains

Preparation: The bark and leaves boiled, and the water is applied to the affected area.

Dosage / Application: As above as necessary.

Use 2: Medicament for sprains.

Preparation: The bark and leaves are warmed, and used as a poultice to treat sprains.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2033.

Botanical name: *Palicourea rigida* H.B.K.

Common name: whey-lu-wey-yik, wher-uh-wey-yik (Patamona)

Shrub less than 1 m high in open savanna; inflorescence terminal; flowers yellow; fruit a berry, green.

Use 1: Charm to break an "evil-eye" spell.

Preparation: The whole plant is boiled, and the water used for washing the skin to break the "evil-eye" spell.

Dosage / Application: It is applied daily for 3 days.

Use 2: Herbal bath.

Preparation: The whole plant is macerated in water and used for an herbal bath.

Collection voucher: Tiwari 2087.

Family: Rutaceae

Botanical name: *Fagara* sp.

Common name: ko-maie-yik (Patamona).

Shrub 2-3 m high.

Use 1: Anti-arthritis.

Preparation: The bark and leaves are macerated, warmed, and used as a bandage around

joints as a treatment for arthritis pain.

Dosage / Application: It is applied as necessary.

Use 2: Anti-dermatosis.

Preparation: The inner bark and leaves are macerated, and the juice used as a treatment for skin conditions.

Dosage / Application: It is applied 3-4 times daily.

Use 3: Anti-fungal.

Preparation: The leaves are macerated, and the juice used as a treatment for fungal infection.

Dosage / Application: It is applied 2-3 times daily.

Use 4: Medicament for eczema/ dermatosis

Preparation: The leaves are macerated, and the juice used as a treatment for eczema.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: The inner bark and leaves are macerated, and the juice used as a treatment for skin conditions.

Dosage / Application: It is applied 3-4 times daily.

Collection voucher: Tiwari 2141.

Botanical name: *Xanthoxylum rhoifolium* Lam.

Common name: a-gik-yik (Patamona).

Tree 6 m high; trunk straight, diameter 12-14 cm, with spines; bark 2-4 mm thick, grayish, with a fragrant smell; sterile; leaves alternate, compound; wood sample taken.

Use 1: Anti-malarial.

Preparation: The bark is boiled with water and drunk as a remedy for malarial infection.

Dosage / Application: 75-150 ml is drunk 3 times daily.

Use 2: Anti-pyretic.

Preparation: The inner bark and leaves are boiled, and the water drunk for reducing fevers.

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 1969.

Family: Sapindaceae

Botanical name: *Paullinia acuminata* Uitt.

Common name: pi-gik-yik (Patamona).

Woody liana; leaves alternate, compound, imparipinnate; leaflet dentate.

Use: Fish poison.

Preparation: Stem is ground and used as a fish poison.

Collection voucher: Tiwari 2067.

Family: Scophulariaceae

Botanical name: *Scoparia dulcis* L.

Common name: sweet broom.

Herb less than 0.5 m high; flowers yellowish-white.

Use 1: Anti-asthmatic.

Preparation: Whole plant is boiled, and the water drunk as a remedy for asthma.

Dosage / Application: 300 ml is drunk 3 times daily.

Use 2: Anti-pyretic.

Preparation: Whole plant is boiled, and the water drunk as a remedy for reducing fevers.

Dosage / Application: 150-300 ml is drunk 3 times daily.

Use 3: Herbal bath.

Preparation: Whole plant is macerated in water and used for an herbal bath.

Use 4: Medicament for colds.

Preparation: Whole plant is boiled, and the water drunk as a remedy for colds.

Dosage / Application: 150-300 ml is drunk 3 times daily.

Use 5: Medicament for coughing.

Preparation: Whole plant is boiled, and the water drunk as a remedy for coughing.

Dosage / Application: 150-300 ml is drunk 3 times daily.

Collection voucher: Tiwari 2126 (see 1738).

Family: Simaroubaceae

Botanical name: *Quassia guianensis* Aubl.

Common name: wa-ra-tak-pu-ta-yik (Patamona).

Tree 5 m high; leaves alternate, pinnately compound; leaflets alternate; flowers

yellow, small.

Use: Anti-helmintic.

The bark is boiled, and the water drunk as a treatment for intestinal worm infection.

Dosage / Application: 150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2099.

Family: Smilacaceae

Botanical name: *Smilax cumanensis* Willd.

Common name: che-pou-tai-yik (Patamona).

Liana with spines; leaves alternate, simple; tendrils attached to the base of the petiole

Use 1: Medicament for back pain.

Preparation: The root is boiled with water and drunk as a treatment for back pain.

Dosage / Application: 300 ml is taken 3 times daily.

Use 2: Tonic.

Preparation: The root and stem is boiled with water, sugar added and used as a tonic.

Collection voucher: Tiwari 1972 (see 1609).

Family: Solanaceae

Botanical name: *Solanum leucocarpon* Dunal

Common name: pu-ru-mac-yik (Patamona).

Herb 1 m high; plant covered with spines; fruit a berry, green.

Use: Anti-malarial.

Preparation: The roots are boiled, lime juice and a pinch of salt added, and the liquid is drunk as a treatment for malarial infection.

Dosage / Application: 150 ml is drunk 3 times daily.

Collection voucher: Tiwari 2082 (see 1473).

Botanical name: *Solanum paludosum* Moric.

Common name: muk-rou-ko-rai-yik (Patamona).

Herb 1 m high; stem with hairs; leaves large, with spines.

Use: Anti-malarial.

Preparation: The fruits are boiled, and the water drunk as a treatment for malarial infection.

Dosage / Application: 150 ml is drunk 2 times daily.

Collection voucher: Tiwari 2081 (see 1473).

Botanical name: *Solanum rugosum* Dunal

Common name: none.

Herb 1-2 m high; fruit a berry, green.

Use: Medicament for "bush yaws".

Preparation: The seeds are crushed into a powder and used to treat persistent sores.

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2079 (see 1473).

Family: Tiliaceae

Botanical name: *Corchorus hirtus* L.

Common name: pan-da-rak-yik (Patamona).

Shrub 1 m high, leaves alternate, serrate.

Use 1: Anti-dermatosis.

Preparation: The leaves are macerated and the juice used for treating skin conditions.

Dosage / Application: It is applied 3 times daily.

Use 2: Anti-fungal.

Preparation: The whole plant is macerated and the juice used for treating fungal conditions.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for chicken pox.

Preparation: The leaves are macerated, the juice warmed and used for treating chicken pox
Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for eczema.

Preparation: The leaves are macerated, and the juice used as treatment for eczema.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for measles.

Preparation: The leaves are macerated, and the juice used as a treatment for measles.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: The leaves are macerated and the juice used for treating sores.

Dosage / Application: It is applied 3 times daily.

Use 6: Anti-dermatosis.

Collection voucher: Tiwari 2155

Quercetin and kaempferol, flavonoids extracted from leaves and flowers of *Corchorus depressus*, demonstrated anti-microbial activity against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. Quercetin showed no activity against *Candida albicans* (Harsh and Nag, 1988).

Family: Ulmaceae

Botanical name: *Ampelocera edentula* Kuhl.

Common name: tung-yik (Patamona).

Tree 6-8 m high; trunk straight, diameter 12-16 cm; bark grey; leaves alternate.

Use 1: Anti-dermatosis.

Preparation: The bark is boiled, and the water used for washing the skin as a treatment for skin infections.

Dosage / Application: It is applied 2-3 times daily (most effective treatment).

Use 2: Anti-inflammatory.

Preparation: The bark is boiled, and the water drunk as treatment for inflammation.

Dosage / Application: 30 ml is taken 2 times daily.

Use 3: Anti-infective

Preparation: The inner bark is macerated and the juice used as an anti-infective agent.

Use 4: Medicament for eye infections / sore eyes

Preparation: The bark is macerated and the juice used for treating eye infections.

Dosage / Application: 1-2 drops are applied 2 times daily.

Use 5: Medicament for chicken pox

Preparation: The bark is boiled, and the water used for washing the skin as a treatment for chicken pox.

Dosage / Application: It is applied 2-3 times daily.

Use 6: Medicament for measles.

Preparation: The bark is boiled, and the water used for washing the skin as a treatment for measles.

Dosage / Application: It is applied 2-3 times daily (most effective treatment).

Collection voucher: Tiwari 2028.

Family: Verbenaceae

Botanical name: *Aegiphila integrifolia* (Jacq.) Jacks.

Common name: co-mey-yah-ray-yik (Patamona).

Herb; flowers white.

Use 1: Anti-dermatosis.

Preparation: The leaves are macerated, and the juice used to treat skin conditions.

Dosage / Application: It is applied as often as necessary.

Use 2: Medicament for chicken pox.

Preparation: The leaves are macerated, and the juice used as a treatment for chicken pox.

Dosage / Application: It is applied 3 times daily.

Use 3: Medicament for eczema / dermatosis

Preparation: The leaves are macerated, and the juice used as treatment for eczema.

Dosage / Application: It is applied 3 times daily.

Use 4: Medicament for measles.

Preparation: The leaves are macerated, and the juice used as a treatment for measles.

Dosage / Application: It is applied 3 times daily.

Use 5: Medicament for sores.

Preparation: The leaves are macerated, and the juice used for treating sores.

Dosage / Application: It is applied 3 times daily.

Collection voucher: Tiwari 2053.

Botanical name: *Lantana camara* L.

Common name: khya-wuk-yik (Patamona).

Herb 1 m high; flowers orange-red.

Use 1: Anti-asthmatic.

Preparation: The leaves are boiled, and the water drunk as a medication for asthma.

Dosage / Application: 150-300 ml is drunk daily.

Use 2: Anti-malarial.

Preparation: The leaves are boiled, and the water drunk as a medication for malarial infection.

Dosage / Application: 150 ml is taken 3 times daily.

Use 3: Anti-pyretic.

Preparation: The leaves are boiled, and the water drunk as a medication for reducing fevers.

Dosage / Application: 150 ml is taken 3 times daily.

Use 4: Anti-tuberculosis.

Preparation: A decoction of the whole plant is drunk as a treatment for tuberculosis.

Dosage / Application: 150-300 ml is taken daily.

Use 5: Medicament for cold sweat.

Preparation: The leaves are boiled, and the water used for washing the skin as a treatment for cold sweat.

Dosage / Application: It is applied 2 times daily.

Use 6: Medicament for whooping cough.

Preparation: The leaves are boiled, and the water drunk as a treatment for whooping cough.

Dosage / Application: 300 ml is taken daily.

Collection voucher: Tiwari 2055.

The flavonoid Umuhengerin from *Lantana camara* and *Lantana trifolia* leaves exhibited significant antibacterial and anti-fungal activities against several human pathogenic bacteria and fungi (Rwangabo *et al.*, 1988; Sharma & Sharma, 1989). It is also a source of pentacyclic triterpenoids (Sharma & Sharma, 1989).

Botanical name: *Lippia* sp.

Common name: ah-pu-row-rai-yik (Patamona).

Herb in weedy patch.

Use 1: Medicament for muscular aches and pains.

Preparation: The leaves are warmed and tightly strapped around the joints and other affected areas as a treatment for aches and pains

Dosage / Application: It is applied 2 times daily.

Collection voucher: Tiwari 2118.

Oils from *Lippia sidoides* is reported to possess antibacterial and anti-fungal activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Saccharomyces cerevisiae*, *Cryptococcus neoformans*, *Trichophyton mentagrophytes*, and *Aspergillus flavus* (Lemos *et al.*, 1990). Oils from *Lippia citriodora* is reported to have bactericidal activity (Pellecuer *et al.*, 1980). Oils from *Lippia gracilis* and *Lippia macrophylla* are also reported to possess antibacterial activities against Gram-negative and Gram-positive bacteria (Lemos *et al.*, 1992).

Family: Zingiberaceae

Botanical name: *Renealmia floribunda* K. Schum.

Common name: ko-no-piya-yik (Patamona).

Shrub in moist places; fruit a berry, red turning black, located near base of root.

Use 1: Anti-fungal .

Preparation: The fruit is crushed, and used for treating ringworm infection.

Dosage / Application: It is applied 2-3 times daily.

Use 2: Anti-dermatosis.

Preparation: Fruit is crushed, mixed with water, and used for treating skin conditions.

Dosage / Application: Apply 2-3 times daily.

Use 3 Anti-herpetic.

Preparation: Fruits are crushed, and the juice used to treat genital herpes.

Dosage / Application: It is applied 3-4 times daily.

Use 4: Anti-pruritic.

Preparation: The fruit is crushed, and used to treat itching.

Dosage / Application: As above 2-3 times daily.

Use 5: Medicament for sores.

Preparation: Fruits are crushed, and the juice used to treat sores.

Dosage / Application: It is applied 2-3 times daily.

Collection voucher: Tiwari 2066.



Ethnomedicine of the Patamona Indians of Guyana

by

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Volume II

**A dissertation submitted to
the Graduate Faculty in Biology
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy,
The City University of New York**

2000

Chapter 6

Analysis of Patamona medicinal plants

Indigenous peoples of the forest have an intimate knowledge of plants and their uses, vitally important knowledge which could be lost through acculturation and deforestation. The risk becomes greater where mining and lumbering are on the increase, as they are in Guyana. A comprehensive ethnobotanical and ethnomedical qualitative and quantitative surveys are necessary so as not to lose this vital knowledge.

This chapter presents an analysis and overview of such a study conducted through several years of fieldwork among the Patamona Indians of Guyana. Figures and tables are provided in the appendices. Appendices 1 and 3 summarize mathematical analyses of the results, using methods not previously applied to South American medicinal plants. Appendices 2, 4, 5, 6, 7 and 8 provide more conventional treatment of ethnobotanical data, and appendix 9 is concerned with conservation.

The Patamona are one of nine groups of indigenous peoples in Guyana. They represent approximately 10% of the indigenous population of the country (Forte, 1990). The traditional homeland of the Patamona Indians extends across part of the Pakaraima Mountain Range and the North Rupununi area, and is close to the Potaro and Ireng Rivers. The Patamona Indians are related to the Akawaio and are part of the Cariban language group of South American Indians.

Several Patamona villages were visited for this study: Chiung, Kamana, Kato,

Kopinang, Tumong and Waipa. Kamana and Kato are savanna habitats while the others are forested / riverine habitats. These villages are isolated from each other and the means of communication between villages is via radio set or by walking from one village to the other. The Patamona generally are not nomadic, even though they would leave the village for long periods of time to hunt and fish. Their principal crops are bitter cassava, some corn, some sugar cane and banana. They rely on the forest for survival, especially in the dry seasons. They are also very skilful at gathering fruits and nuts from the forest to supplement their diet.

During my research, I saw the Patamona Indians becoming acculturated. Their customs and practices are changing. For example, they no longer wear their traditional mode of dress and celebrate their festivals. Their supernatural beliefs, however, are still intact. The Piaiman (witchdoctor / shaman), although not popular, still officiates at healing rituals. Also intact is their knowledge of plants, because of the remoteness and isolation of the villages and the unavailability of medical services. There are health centers in some villages, but no drugs are available for treating patients. Therefore, the people turn to the forest.

This analysis shows the relationship between the medicinal flora of the Patamona and the flora of the Region where they live. What percent of the medicinal flora is used to treat a particular disease? What percent of the flora in the Region is used to treat a disease? Are plants chosen as medicinal plants based merely on their availability, or on

their natural products? It is also important to determine which plant family is most important and more likely to be used to treat a particular disease. This information can be used for selecting a particular family or species to investigate for plant secondary compounds. This information will enable others to compare the Patamona medicinal plants with those of other indigenous groups elsewhere and in Guyana. Previous comparisons of indigenous knowledge allow this qualitative analysis with the Patamona.

Plants used as abortifacients (Table 1)

Families used to induce abortion are shown in Table 1. The species used are *Ananas comosus* (Bromeliaceae), *Citrus aurantifolia* (Rutaceae) and *Phthirusa retroflexa* (Loranthaceae). These species represent 0.58% of the medicinal flora and 0.17% of the flora of the Region. Among the families used, 7.88% are Bromeliaceae, 35.4% are Loranthaceae and 56.69% are Rutaceae. The Patamona Indians at Kamana use *Ananas comosus* is while those at Kato use *Citrus aurantifolia*.

The Warao Indians of Guyana also use *Ananas comosus* as an abortifacient (Reinders, 1993). *Ananas comosus* and *Citrus aurantifolia* has also been rumored to have the same use along the coastal Guyana (Latchman-White *et al.*, 1987).

Plants used to treat abscesses (Table 2)

The Patamona Indians use *Crinum erubescens* and *Pedilanthus retusus* to treat abscess. Exudate from the inner bark of *Didymopanax morototoni* and the sticky exudate from fallen bracts of *Cecropia* aff. *peltata* is used by the indigenous peoples of coastal

Guyana and by Yanomami of Brazil (Latchman-White *et al*, 1987; Milliken & Albert, 1997). The Warao use *Cecropia sciadophylla* Mart., *Colochasia escuelenta*, *Crescentia cujete* L., *Hymenocallis tubiflora*, *Jatropha gossypifolia*, *Optunia* sp., *Philodendron scandens* C. Koch & Sello and *Physalis pubescens* to treat abscess (Reinders, 1993).

Plants used to treat acne

The leaves of *Pueraria phaseoloides* is macerated and the juice used to treat acne.

Plants used as analgesics (Tables 3, 4 & 5, Figure 1)

Species in 23 families are used. These represent 1.42% of the flora in Region.

Among the species are *Aspidosperma excelsum* (Apocynaceae), *Bidens cynapiifolia* (Asteraceae), *Brosimum utile* and *Brosimum guianensis* (Moraceae), *Carapa guianensis* (Meliaceae), *Duguetia cauliflora* (Annonaceae), *Piper hostmannianum* and *Piper obliquum* (Piperaceae), *Protium sagotianum* (Burseraceae), and *Smilax syphilitica* (Smilacaceae). Species of the Clusiaceae, Moraceae and Piperaceae with positive residuals are more likely to be used for treating pain. Species of the Clusiaceae with the highest residual number of species used will be the first choice, followed by Piperaceae, Moraceae, Pteridophyta, Caesalpiniaceae, Asteraceae and Apocynaceae. The P – value obtained is not significant. Among the families used as an analgesic 1.54% are Annonaceae, 16.89% Apiaceae, 1.05% are Apocynaceae, 1.25% Arecaceae, 0.66% Asteraceae, 3.75% Burseraceae, 0.6% Caesalpiniaceae, 2.05% Clusiaceae, 6.76% Costaceae, 4.83% Heliconiaceae, 2.31% Loranthaceae, 6.76% Malvaceae, 1.35%

Malpighiaceae, 4.83% Meliaceae, 0.91% Mimosaceae, 8.45% Moraceae, 16.89%

Myristicaceae, 3.07% Piperaceae, 0.35% Pteridophyta, 2.60% Sapotaceae, 8.45%

Smilacaceae, 1.25% Solanaceae and 2.31% Verbenaceae. Di Stasi *et al.*, (1989) reported the possible use of *Piper peltata* (*Pothomorphe peltata*) as an analgesic.

Anti-arthritic plants (Tables 6 & 7, Figures 2 & 3)

For treating arthritis, the most important families are Amaryllidaceae, Burseraceae, Iridaceae, Mimosaceae, Piperaceae, Portulacaceae and Rutaceae. Among the species used are *Acacia articulata* (Mimosaceae), *Cipura* sp. (Iridaceae), *Crinum* sp. (Amaryllidaceae), *Dacryodes nitens* (Burseraceae), *Fagara apiculata* (Rutaceae), *Piper arboreum*, *Piper hostmannianum* and *Piper obliquum* (Piperaceae) and *Portulaca oleracea* (Portulacaceae). These species represents 0.50% of the Regional flora. The line of best fit on the scattergram provides a P-value of 0.4425 and is not significant. Species of the Piperaceae with positive residuals are more likely to be used. Among the families used to treat this disorder 9.89% are Amaryllidaceae, 6.18% are Burseraceae, 16.49% are Iridaceae, 1.34% are Mimosaceae, 6.75% are Piperaceae, 49.46% are Portulacaceae and 9.89% are Rutaceae.

Antibacterial plants (Tables 8, 9 & 10)

Three species of Costaceae, *Costus arabicus*, *Costus claviger* and *Costus erythrothyrus*; 3 species of Malpighiaceae, *Banisteriopsis lucida*, *Byrsonima pachypoda* and *Byrsonima verbascifolia*; and 2 species of Poaceae, *Cymbopogon citratus* and

Oplismenus sp. are among the 18 species used to treat bacterial infections. Thus 5.31% of the total medicinal species documented, and 1.04% of the flora of the Region that are used to treat bacterial infections. The families Costaceae, Malpighiaceae and Poaceae show positive residual in the regression analysis. Species in these families are more likely to be used for treating bacterial infections.

Anti-diabetic plants (Table 11)

Species in two families are used to treat diabetes. Decoctions of two species *Annona hypoglauca* (Annonaceae) and *Momordica charantia* (Cucurbitaceae) are drunk. The two species represent 0.59% of the medicinal flora and 0.11% of the flora in the Region. Reinders (1993) also reported the use of *Momordica charantia* by the Warao for the same disorder. Among the two families in the Region used 73.31% are Cucurbitaceae (fewer species in the flora than the Annonaceae) and 26.69% are Annonaceae.

Anti-diarrheal plants (Tables 12 & 13, Figures 4 & 5)

Fifty-seven species in 24 families are used by the Patamona Indians to treat this diarrhea. This disease is one of the most important diseases in the Region, probably due to the drinking of untreated water. The most important families are Myrtaceae with 14 species, *Calycolpus goetheanus*, *Calypttranthes pulchella*, *Eugenia anastomosans*, *Eugenia puniceifolia*, *Eugenia* sp. (Voucher number 1414, 1942), *Marlierea* cf. *summa*, *Myrcia guianensis*, *Myrcia inequiloba*, *Myrcia sylvatica*, *Myrcia tomentosa*, *Psidium acutangulum*, *Psidium guajava*, *Psidium guianeense* and *Psidium guianensis*; Clusiaceae

with 7 species, *Clusia cuneata*, *Clusia fockeana*, *Clusia schomburgkiana*, *Clusia scorbiculata*, *Platonia insignis*, *Vismia angusta* and *Vismia macrophylla*; *Caesalpiniaceae* with 6 species, *Bauhinia guianensis*, *Bauhinia rubiginosa*, *Bauhinia scala-simiae*, *Bauhinia surinamensis*, *Mora excelsa*, *Myroxylon peruferum* and *Swartzia bannia*; *Malpighiaceae* with 5 species, *Byrsonima concinna*, *Byrsonima coriacea*, *Byrsonima crassifolia*, *Byrsonima pachypoda* and *Byrsonima verbascifolia*, among others. The 57 species represent 3.1% of the flora of the Region. Species in 15.48% of the families documented in the Region are used for treating this disorder, is not surprising, as it is one of the five most common diseases in the Region. The P-value obtained from the regression analysis is 0.2167 and is not significant. The families *Anacardiaceae*, *Burseraceae*, *Caesalpiniaceae*, *Clusiaceae*, *Malpighiaceae* and *Myrtaceae* show positive residual in the regression analysis. Species in these families are likely to be used for treating diarrhea.

Reinders (1993) reported similar use of the genus *Anacardium* sp. (*Anacardiaceae*), *Aristolochia* sp. (*Aristolochiaceae*), *Bauhinia* sp. (*Caesalpiniaceae*), *Licania* sp. (*Chrysobalanaceae*), *Psidium* sp. (*Myrtaceae*) and *Vismia* sp. (*Clusiaceae*). Whether there are different types of diarrhea, I cannot say but should report that Posey (1989) mentioned the classification of over 150 types of diarrhea / dysentery by the Mebengokre and each type is treated with a specific medicine. The high number of species used for treating diarrhea is also observed among the Kayapo. Elisabetsky and Posey (1994)

reported that 60 plant species are used by the Kayapo for treating gastrointestinal disorders.

Anti-dysenteric plants (Tables 14 & 15, Figures 6, & 7)

The species used are *Anacardium occidentale*, *Aristolochia hians*, *Bauhinia rubiginosa*, *Bauhinia scala-simiae*, *Bauhinia surinamensis*, *Clusia cuneata*, *Clusia* cf. *palmicida*, *Clusia pana-panari*, *Clusia schomburgkiana*, *Clusia scorbiculata*, *Byrsonima coriacea*, *Byrsonima crassifolia*, *Byrsonima pachypoda*, *Carapa guianensis*, *Calycolpus goetheanus*, *Eugenia* sp. (Voucher number 1414, 1942), *Marlierea* cf. *summa*, *Myrcia guianensis*, *Psidium acutangulum*, *Psidium guajava*, *Psidium guianensis*; *Bocconia pearcei*, *Pouteria venosa*, *Quassia amara* and *Simarouba amara*. These 25 species represent 6.87% of the medicinal flora in the Region. The P-value obtained from the regression analysis is 0.0207 and is significant. The families Clusiaceae, Myrtaceae and Simaroubaceae show positive residuals in the regression analysis. Species in these families are more likely to be used for treating dysentery.

Anti-helminthic plants (Table 16, Figures 8 & 9)

The Patamona Indians use *Crinum erubescens*, *Carica papaya*, *Cyrilla racemosa*, *Siparuna guianensis*, *Amaiouea* cf. *brevidentata* and *Quassia guianensis* to treat intestinal worm infections. These species represent 0.33% of the flora of the Region.

Latchman-White *et al.* (1987) reported the use of *Carica papaya* and *Siparuna guianensis* for treating intestinal worm infections along coastal Guyana. The Warao,

however use *Melapodium camphoratum* (L.F.) Bak., *Montricardia arborescens* (L.) Schott and *Passiflora foetida* for worms (Reinders, 1993). Johnston and Colquhoun (1996) reported the use of *Mucuna urens* as an anti-helminthic agent.

Anti-herpetic plants (Tables 17 & 18, Figures 10, 11 & 12)

Eight species in four families representing 0.44% of the flora of the Region, are used to treat genital herpes. These are *Ichthyothere terminalis*, *Vismia cayennensis*, *Vismia japurensis*, *Vismia angusta*, *Vismia macrophylla*, *Crotalaria pilosa*, *Carapa guianensis* and *Renealmia floribunda*. The P-value is 0.8192, and is not significant. The family Clusiaceae shows positive residual in the regression analysis. Therefore, species in this family are more likely to be used for treating genital herpes.

At Kurupukari, a mixed Amerindian village, *Tabebuia insignis* (Miq.) Sandw. (Bignoniaceae) is reported to treat skin diseases (Johnston & Colquhoun, 1996) while in the Northwest, the Warao use *Anacardium occidentale*, *Clathotropis brachypetala*, *Irlbachia alata* and *Senna alata* L. to treat itching (Reinders, 1993).

Plants used as antihistamines (Table 19)

Three species in 3 families are used by the Patamona Indians for their antihistamine effect. These are *Anthurium expansum*, *Heliconia psittacorum* and *Protium sagotiannum*.

The Warao use *Pimpinella anisum* L. powder, *Philodendron* sp. and *Siparuna guianensis* (Reinders, 1993). Along the coastal Guyana, *Clathotropis brachypetala* and

Lonchocarpus sp. are used (Latchman-White *et al.*, 1987). At Kurupukari, a mixed Amerindian village, *Tabernaemontana undulata* Vahl. are used (Johnston & Colquhoun, 1996).

In Brazil, *Dieffenbachia bolivarana* Bunting and *Philodendron solimoesensis* A. C. Smith are used by the Yanomami to treat ants and scorpion stings (Milliken & Albert, 1997; 1996). The Colorado Indians use *Philodendron inaequilaterum* Liebm., *Philodendron scandens* C. Koch & H. Sello and an unidentified *Philodendron* sp. to treat insect stings. The Cayapa and Quichua used *Dieffenbachia seguine* (Jacq.) Schott, and the Siona-Secoya use *Monstera obliqua* Miq. and *Syngonium podophyllum* Schott (Kvist & Holm-Nielson, 1987). Each one of these indigenous groups uses at least one species of the Araceae family as an antihistamine agent.

Plants used as anti-infective agents (Tables 20, 21 & 22)

The Patamona Indians use 27 species in 17 families as anti-infective plants. Among the species are *Ampelocera edentula*, *Byrsonima concinna*, *Byrsonima crassifolia*, *Canna indica*, *Chaptalis integerrima*, *Cissampelos pareira*, *Cordia polycephala*, *Costus arabicus*, *Costus claviger*, *Costus erythrothyrus*, *Davilla kunthii*, *Duguetia* sp., *Jacaranda copaia*, *Justicia calycina*, *Loreya mespiloides*, *Olyra latifolia*, *Olyra micrantha*, *Oplismenus* sp., *Oxandra* sp., *Passiflora vespertilo*, *Pteridium aquilunum*, *Rhynchospora barbata*, *Rhynchospora cephalotes*, *Scleria arundinacea*, *Vismia angusta*, *Vismia cayenennsis* and *Vismia guianensis*. These species represent 7.96% of the

medicinal flora and 1.49% of the flora of the Region. On a scattergram, regression analysis and line of best fit gave a P-value of 0.4260 which is not significant. The families Annonaceae, Clusiaceae, Costaceae, Cyperaceae, Malpighiaceae and Poaceae show positive residuals in the regression analysis. Therefore, species in these families are more likely to be used for treating infections.

Anti-inflammatory plants (Tables 23 & 24. Figure 13)

Ten species *Acacia paniculata*, *Ampelocera edentula*, *Aspidosperma album*, *Axonopus anceps*, *Brysonima crassifolia*, *Cissampelos pareira*, *Oplismenus* sp., *Passiflora vespertilo*, *Rhynchospora barbata* and *Solanum scandens* representing 9 families are used as anti-inflammatory plants. This is 2.87% of the medicinal flora and 0.55% of the flora of the Region.

On a scattergram, regression analysis and line of best fit gave a P-value of 0.0178 which is significant. The families Menispermaceae, Passifloraceae, Poaceae and Ulmaceae show positive residuals. Therefore, species in these families are more likely to be used for treating inflammation.

Latchman-White *et al.* (1987) reported the use of *Philodendron fragrantissimum* and *Pothomorphe peltata* (*Piper peltata*) for treating inflammation. Johnston and Colquhoun (1996) used broad categories such as skin problems and liver problems and are rather difficult to determine whether they mean inflammation of the liver or some other disease of the liver. However, at Kurupukari, a mixed Indian village, *Cecropia* sp. is used to

treat skin problems, *Lecythis zabucajo* Aubl. is used to treat liver problems, *Quassia cedron* Baill. and *Tabernaemontana undulata* are used to treat skin irritations.

In French Guiana, a decoction of *Stachytarpheta cayennensis* (Rich.) Vahl and several species of *Solanum* are also used to treat liver problems. (Grenand *et al.*, 1987).

Reinders (1993) recorded 8 species used by the Warao to treat swelling instead of inflammation. Among the species are *Allium sativa* L., *Capraria biflora*, *Crescentia cujete* L., *Gossypium barbadense*, *Jatropha curcas* L., *Nicotiana tabacum*, *Philodendron scandens* C. Koch & Sello, *Physalis pubescens* L. and *Pothomorphe peltata* (L.) Miq.

Anti-irritant plants used to treat babies when they are irritable and unable to sleep (anti-irritant / insomnia / nightmare. Tables 25, 26 & 27, Figure 14)

It is rather difficult to determine what this disorder is. The characteristics described by Mrs. Loudina Williams are: a) the baby does not sleep well, and b) the baby will wake crying during the middle of the night, or even during the daytime, and have a very difficult time getting back to sleep. The species used are *Crinum erubescens*, *Mimosa pigra*, *Mimosa somnians*, *Physalis pubescens* and *Vismia angusta*. This represents 0.28% of the flora of the Region. The P-value from regression analysis is 0.4380 which is not significant. The families Amaryllidaceae and Mimosaceae show positive residuals. Species in these families are therefore more likely to be used as anti-irritant plants.

Balée (1994) in his treatment of the Ka'apor ethnobotany described several

plants that are used by the Ka'apor Indians to treat nightmares. Among them are *Caladium picturatum*, *Chenopodium ambrosioides*, several species of Anacardiaceae, *Pradosia* sp. and *Tratinickia burserifolia*. Milliken and Albert (1997) in their treatments of the Yanomami plants described the use of *Proitium fimbriatum* Swartz, (Burseraceae) as a treatment for insomnia.

Plants used as anti-menorrhagic agents (Tables 28, 29 & 30)

This term is used to describe heavy menstrual blood flow and includes hemorrhage and belly pain associated with blood loss. Eight species in 6 families representing 2.31% of the medicinal species and 0.44% of the flora of the Region are used to treat this disorder. The species used are *Bulbostylis paradoxa*, *Byrsonima verbascifolia*, *Calytrocarpa glomerata*, *Carapa guianensis*, *Mikania micrantha*, *Palicourea rigida*, *Scleria arundinacea* and *Trichomanes arbuscula*. The P-value obtained is 0.8706 which is not significant. The family Cyperaceae shows positive residual in the regression analysis. Therefore species in this family are more likely to be used to treat excessive bleeding during the menstrual cycle.

Latchman-White *et al* (1987) reported the use of 6 species, *Carica papaya*, *Cordia curassavica*, *Cyperus giganteus*, *Hyptis pectinata*, *Justicia secunda* and *Piper nigrum* for treating problems associated with menstrual flow. Reinders (1993) reported the use of several species by the Warao. Among these species are *Allium sativum* L., *Anacardium occidentale* L., *Brownea latifolia* Jacq., *Centropogon cornutus* (L.) Druce

(Campanulaceae), *Citrus aurantifolia*, *Euterpe olearaceae*, *Sabicea aspera* Aubl., *Sida rhombifolia* (Malvaceae) and *Zingiber officinale* among others. Interestingly, the Siona-Secoya and Quichua tribes of Ecuador are also using several species of *Brownea* as contraceptive / menstrual plants (Kvist & Holm-Nielsen, 1987). Balée (1994) reported the use of *Abuta grandifolia*, *Duguetia surinamensis*, *Hymenaea parvifolia* and *Unonopsis rufescens* by the Ka'apor Indians to treat this disorder.

Plants used as anti-microbial agents (Table 31)

Two species, *Byrsonima concinna* (Malpighiaceae) and *Olyra micrantha* (Poaceae) are used as anti-microbial plants. This represents 4.0% of the species of Malpighiaceae (1 of 25 species) and 1.0% of the species of Poaceae (1 of 100 species) in the Region. It is 0.59% of the total medicinal species and 0.11% of the flora of the Region.

Anti-pruritic plants (Tables 32 & 33, Figures 15 & 16)

The Patamona Indians use 32 species in 21 families to treat itching skin. The species are *Adiantopsis radiata*, *Alzatea verticillata*, *Anthurium pentaphyllum*, *Aspidosperma album*, *Brosimum alicastrum*, *Canna indica*, *Carapa guianensis*, *Chenopodium ambrosioides*, *Citrus limon*, *Clathotropis brachypetala*, *Dacryodes nitens*, *Desmoncus polycanthus*, *Didyopanax morototonii*, *Gossypium barbadense*, *Himatanthus bracteatus*, *Himatanthus drasticus*, *Ichthyothere terminalis*, *Lantana camara*, *Lomagramma* sp., *Lygodium micans*, *Momordica charantia*, *Pedilanthus retusus*, *Pithecellobium laetum*, *Protium sagotianum*, *Pueraria phaseoloides*, *Renealmia floribunda*, *Sida cordifolia*,

Trichilia pallida, *Vismia amazonica*, *Vismia angusta* and *Vismia cayennensis*. These plants are used in different ways to alleviate the symptoms and they represent 1.69% of the flora of the Region. The P-value obtained from regression analysis is 0.0319 which is significant. The families Apocynaceae, Clusiaceae, Malvaceae and Meliaceae show positive residuals in the regression analysis. Therefore species in these families are more likely to be used to treat itching (anti-pruritic plants).

Latchman-White *et al.* (1987) reported the use of *Carapa guianensis* (oil from seed), *Didymopanax morototonii* (decocotion of inner bark), *Elephantopus pilosus* (juice from macerated leaves), *Mikania micrantha* (macerated leaves) and *Vismia guianensis* to treat itches along coastal Guyana. Reinders (1993) in investigating the Warao's medicinal plants reported the use of *Anacardium occidentale*, *Cassia alata*, *Clathotropis brachypetala* and *Nicotiana tabacum* to treat itching. Johnston and Colquhoun (1996) did not report any plant used specifically to treat itching at Kurupukari but lists several plants that are used to treat various skin conditions. Some of these plants are *Tabernaemontana undulata*, *Mikania hookeriana*, *Licania alba*, *Quassia amara*, *Cecropia* sp., *Mora excelsa* and *Tabebuia insignis*, among others. Balée (1994) reported the use of 19 species in several families by the Ka'apor Indians to treat itching including *Asclepias curassavica*, *Banisteriopsis* sp, *Galipea trifoliata*, *Porophyllum* sp., *Pterocaulon* sp, and *Sagotia racemosa* Baill. *Tanaecium nocturnum* (Barb, Rodr.) Bur. ex K Schum., a Bignoniaceae is used by the Yanomami Indians of Brazil to treat itching.

Plants used as anti-pyretic agents (Tables 34 & 35, Figures 17, 18 & 19)

The Patamona Indians use 46 species in 26 families to treat fevers. The species used are *Achryanthes aspera*, *Cyathula prostrata*, *Anacardium occidentale*, *Astronium ulei*, *Duguetia pycnaestra*, *Eryngium foetidum*, *Aspidosperma album*, *Bactris gassipaes*, *Desmoncus polycanthus*, *Oenocarpus* sp., *Aristolochia hians*, *Bidens cynpiifolia*, *Mikania banisterae*, *Mikania psilostachya*, *Chenopodium ambrosioides*, *Costus erythrothyrus*, *Rhynchospora barbata*, *Croton* sp., *Phyllanthus acuminatus*, *Ricinus cummunis*, *Ocotea guianensis*, *Pavonia fruticosa*, *Banisteriopsis lucida*, *Stigmaphyllon fulgens*, *Stigmaphyllon sinnuatum*, *Gossypium brasiliense*, *Sida cordifolia*, *Siparuna guianensis*, *Cymbopogon citratus*, *Oplismenus* sp., *Panicum rudgei*, *Trichomanes arbuscula*, *Palicourea rigida*, *Psychotria capitata*, *Citrus aurantifolia*, *Zanthoxylum rhoifolia*, *Scoparia dulcis*, *Simarouba amara*, *Brunfelsia guianensis*, *Solanum nigrum*, *Solanum stramonifolium*, *Piriqueta cistioides*, *Turnera rupestris*, *Lantana camara*, *Phyla* sp. and *Zingiber officinale*. The P-value obtained from regression analysis is 0.1399 which is not significant. The families Amaranthaceae, Anacardiaceae, Arecaceae, Asteraceae, Euphorbiaceae, Malpighiaceae, Poaceae, Rutaceae, Solanaceae, Turneraceae and Verbenaceae show positive residuals in the regression analysis. Therefore species in these families are more likely to be used as anti-pyretic plants.

Along the coastal Guyana, a leaf infusion of *Ricinus communis* and decoctions of *Scoparia dulcis*, *Siparuna guianensis*, *Cymbopogon citratus* are used orally or as herbal

baths for treating fevers (Latchman-White *et al.*, 1987). The Warao use various preparations of *Anacardium occidentale*, *Citrus limon*, *Citrus aurantifolia*, *Cymbopogon citratus*, *Mikania congesta*, *Quassia amara*, *Scoparia dulcis*, *Siparuna guianensis*, *Lantana camara* and *Zingiber officinalis* among other plants to treat fever (Reinders, 1993). The Yanomami and Tiriyó Indians of Brazil, Secoya of Ecuador use *Cyperus articulatus* L (Cyperaceae) to treat fever (Milliken & Albert, 1996; Cavalcante & Friel, 1993; Schultes & Raffauf, 1990). *Spondias mombin* (Anacardiaceae) and three species of Piperaceae are also used by the Yanomami to treat fevers (Milliken & Albert, 1996). In Colombia and French Guiana, the Tiwano and Wayapi Indians bathe with a leaf decoction of *Peperomia macrostachya* (Vahl) A. Dietr. as treatment for fever (Shultes & Raffauf, 1990; Grenand *et al.*, 1987).

Plants used as antiseptic agents (Tables 36, 37 & 38)

Thirty-two species in 21 families representing 8.38% of the medicinal species and 1.69% of the flora of the Region are used as antiseptic agents. The species are *Achyranthes aspera*, *Anacardium occidentale*, *Bactris gassipaes*, *Bryophyllum pinnatum*, *Bulbostylis paradoxa*, *Calyptranthes pullei*, *Clusia grandiflora*, *Clusia nemorosa*, *Cyathula prostrata*, *Davilla kunthii*, *Eschweilera sagotiana*, *Eschweilera* sp., *Havetiopsis flavida*, *Ichthyothere terminalis*, *Mabea caudata*, *Mabea caudata* var *concolor*, *Moronobea coccinea*, *Musa* sp., *Myricaria amazonica*, *Norantea guianensis*, *Oryctanthus florulenthus*, *Oxandra* sp., *Pedilanthus retusus*, *Pedilanthus tithymaloides*, *Penthaclethra*

macroloba, *Phoradendron crassifolium*, *Pithecellobium laetum*, *Portulaca oleracea*, *Pteridium aquilinum*, *Pueraria phaseoloides*, *Scleria arundinacea*, *Scoparia dulcis* and *Solanum macranthum*. The P-value obtained from regression analysis is 0.5460 which is not significant. The families *Amaranthaceae*, *Clusiaceae*, *Cyperaceae*, *Euphorbiaceae*, *Lecythidaceae*, *Loranthaceae*, *Mimosaceae* and *Myrtaceae* show positive residuals in the regression analysis. Therefor species in these families are more likely to be used as antiseptic plants.

A decoction of the bark of *Pentaclethra macroloba* is used along coastal Guyana and at Kurupukari, juice from the macerated leaves are used as antiseptic (Latchman-White *et al.*, 1987; Johnston & Colquhoun, 1996). The Warao Indians use juice from macerated leaves of *Clidema hirta* (L.) D.Don (*Melastomataceae*) to treat burns, possibly as an antiseptic (Reinders, 1993).

Plants used as aphrodisiacs

The Patamona Indians use four species, *Tovomita schomburgkii* (*Clusiaceae*), *Doliocarpus macrocarpa*, *Doliocarpus spraguei* and *Doliocarpus savannarum* (*Dilleniaceae*) as aphrodisiac. These represent 1.17% of the medicinal species and 0.22% of the flora of the Region. In the Region 3.03% of the species in the *Clusiaceae* and 33.33% of the species in the *Dilleniaceae* family are used.

Along coastal Guyana, a decoction of *Hyptis pectinata*, the bark of *Hymenaea courbaril*, the stem of *Bauhinia scala-simiae*, the roots of *Philodendron fragrantissimum*

mixed with stem of *Strychnos* sp., *Smilax schomburgkiana*, *Doliocarpus* sp., *Clusia grandiflora* and *Lygodium* sp. are used as aphrodisiacs (Latchman-White *et al.*, 1987).

Balée (1994) reported the use of many species of *Dooliocarpus* as tonic for the general well being of the Ka'apor Indians.

Plants used to treat asthma (Table 39, Figure 20)

The most important families used to treat asthma are shown in Table 39. The species used are *Astronium ulei*, *Aristolochia hians*, *Licania densiflora*, *Licania heteromorpha*, *Licania* sp., *Dichorisandra hexandra*, *Commelina diffusa*, *Costus erythrothyrus*, *Myroxylon peruferum*, *Hyptis pectinata*, *Phoradendron crassifolius*, *Stigmaphyllon fulgens*, *Siparuna guianensis*, *Brosimum guianense*, *Cymbopogon citratus*, *Cyathea procera*, *Scoparia dulcis*, *Nicotanium tobacum* and *Lantana camara*. These species represents 0.88% of the flora of the Region. Among the families used are, 5.17% Anacardiaceae, 36.18% Aristolochiaceae, 1.72% Chrysobalanaceae, 6.03% Commelinaceae, 7.24% Costaceae, 0.84% Fabaceae, 4.52% Lamiaceae, 3.02% Loranthaceae, 1.45% Malpighiaceae, 18.09% Monimiaceae, 4.52% Moraceae, 0.36% Poaceae, 0.37% Ptyridophyta, 6.03% Scrophulariaceae, 1.45% Solanaceae and 3.01% Verbenaceae. It is interesting to note that one species of the Pteridophyta and one species of the Poaceae are used to treat asthma, even though they are among the families with the most species in the Region.

Plants used to treat ground-itch (Athlete's foot)

The Patamona Indians use *Vismia angusta* to treat athlete's foot. This represents 3.03% of the Clusiaceae in the Region. *Urospatha sagittifolia* (Rudge) Schott and *Musa paradisiaca* L. are used by the Warao for the same purpose (Reinders, 1993).

Plants used to treat back pain (Tables 40, 41 & 42, Figure 21)

The Patamona Indians use *Achryanthes aspera* var. *indica*, *Achryanthes aspera*, *Bidens cynapiifolia*, *Cecropia angulata*, *Cecropia obtusa*, *Coussapoa asperifolia* subsp. *asperifolia*, *Davilla kunthii*, *Doliocarpus spraguei*, *Doliocarpus savannarum*, *Hymenaea courbaril*, *Lantana camara*, *Pinzoa coriacea*, *Scoparia dulcis*, *Smilax lasseriana*, *Smilax latipes* and *Tovomita schomburgkii* to treat back pain. These species represent 0.83% of the flora of the Region. The P-value is 0.2677 and is not significant.

Along coastal Guyana, dried leaves of *Cecropia dielsiana*, infusions of roots of *Clusia grandiflora*, decoctions of *Desmodium adscendens* and boiled leaves of *Gossypium* sp., *Vismia* sp. and *Struchium sparganophora* (L.) Kuntze are used to treat back pain (Latchman-White *et al.*, 1987). In northwest Guyana (Warao) *Commelina erecta* L., *Cecropia sciadophylla*, *Centropogon cornutus*, *Clusia grandiflora*, *Desmodium adscendens*, *Doliocarpus dentatus*, *Hymenaea courbaril*, *Eleusine indica* L. and *Sabicea aspera* are used to treat back pain (Reinders, 1993). At Kurupukari, *Abuta obovata* Ducke is used to treat back pain (Johnston & Colquhoun, 1996).

Plants used to treat babies who wet their bed frequently (bed-wetting)

Two species in the Region are used. These are *Loreya mespiloides* representing 0.90% of the species in Melastomataceae family and *Palicourea guianensis* representing 0.74% of the species in Rubiaceae family. Latchman-White *et al.* (1987) reported the use of the center of the immature fruit of *Annona muricata* and a decoction of the aerial parts of *Mimosa pigra* being used for the same purpose.

Plants used to treat biliousness (Tables 43, 44 & 45)

The Patamona Indians use 7 species in 6 families representing 0.39% of the flora of the Region and 2.02% of the medicinal flora to treat biliousness. The species are *Brachypterys ovata*, *Drymaria* sp., *Irlbachia alata*, *Irlbachia purpurascens*, *Licania densiflora*, *Momordica charantia* and *Pentaclethra macroloba*.

Along coastal Guyana, *Cassia alata*, *Cordia curassavica*, *Hymenaea courbaril*, *Momordica charantia* and *Syzygium cumini* are used (Latchman-White *et al.*, 1987). In the northwest, the Warao use *Persea americana*, *Quassia amara*, *Scoparia dulcis* and *Tripogandra serrulata* to treat biliousness (Reinders, 1993).

Plants used to bitter blood

A decoction of the aerial parts of *Curatella americana* is used to bitter the blood. It's the only species (1 of 9 species) of the Dilleniaceae used for this purpose and it represents 11.11% of species in the family of the Region. The Warao use *Momordica charantia*, *Quassia amara* and *Scoparia dulcis* for the same purpose (Reinders, 1993).

Plants used for blood purification (Table 46)

Four species, *Cecropia obtusa*, *Momordica charantia*, *Mikania psilostachya*, *Stigmaphyllon sinuatum* representing 1.17% of the medicinal species and 0.22% of the flora of the Region are used to purify the blood.

Decoctions of *Scoparia dulcis* and *Solanum americanism* are used along coastal Guyana to purify the blood (Latchman-White *et al.*, 1987).

Plants used to "cleanse the body"

Two species *Protium sagotianum* (11.11% Burseraceae in Region) and *Licania densiflora* (4.76% Chrysobalanaceae in Region), are used to cleanse the body. The Warao drink a decoction of *Lantana camara* to "clean out the body" (Reinders, 1993).

Plant used to cause babies to form strong bones

The leaves of *Hyptis parkeri* is macerated and use to massage baby bones to make them strong. This species represents 12.5% (1 of 8 species) of the species of the Lamiaceae in the Region.

Plants used to treat bronchitis (Table 47)

The Patamona use 3 species, *Cymbopogon citratus*, *Trattinickia burserifolia* and *Unonopsis rufescens* to treat bronchitis. These species represent 0.88% of the medicinal species and 0.17% of the flora of the Region.

Johnston and Colquhoun (1996) report the use of *Bactris* sp., *Ormosia coutinhoi* Ducke and *Pentaclethra macroloba* at Kurupukari for treating bronchitis. In Brazil

and French Guiana, the stem and the juice of *Costus guianensis* var. *macrostrobilus*, is used (Milliken *et al.*, 1997; Grenand *et al.*, 1987).

Plants used to treat burns

Two species representing 2.74% of the species of the Cyperaceae are used to treat burns. The species are *Bulbostylis paradoxa* and *Scleria arundinacea*. A mixed group at Kurupukari use an unidentified species commonly known as leaf-of-life to treat burns (Johnston & Colquhoun, 1996). The Warao use *Clidema hirta* (L.) D. Don and *Kalanchoe pinnata* (lam.) Pers. to treat burns (Reinders, 1993).

Plants used to treat “bushyaws” (Tables 48, 49 & 50, Figure 22)

Bushyaws is the common term that is used to describe a persistent sore by indigenous people, and over the years the term has gained a wide acceptance even by non-indigenous groups. The species used to treat bushyaws are *Adiantopsis radiata*, *Anthurium pentaphyllum*, *Canna indica*, *Capsicum* sp., *Chenopodium ambrosioides*, *Clathrotropis macrocarpa*, *Clusia cuneata* and *Clusia nemorosa*, *Coussarea* cf. *paniculata*, *Dacryodes nitens*, *Gossypium barbadense*, *Hyptis pectinata*, *Irlbachia alata* subsp. *alata*, *Jacaranda copaia*, *Lantana camara*, *Mikania micrantha*, *Phoradendron crassifolium*, *Poraqueiba serica*, *Rhodospatha venosa*, *Scleria arundinacea*, *Siparuna guianensis*, *Solanum crinitum*, *Solanum rugosum*, *Solanum stramonifolium*, *Solanum subinerme*, *Vismia amazonica* and *Vismia guianensis*. These species used represent 1.48% of the flora of the Region.

At Kurupukari, a mixed village, Johnston and Colquhoun (1996) did not specifically state whether the plants they collected are used to treat bush yaws. They made several collections, which they describe as used for skin disease, skin sores and yaws. The species used there are *Catostemma fragrans*, *Cecropia* sp., *Eperua falcata*, *Hypolepsis* sp. (a fern), *Jacaranda copaia*, *Mora excelsa*, *Pentaclethra macroloba* and *Tabebuia insignis*. The Warao used *Crepidospermum rhoifolium* (Benth.) Tr. & Pl. to treat bushyaws (Reinders, 1993).

Plants used to treat cataracts

The Patamona Indians use one species, *Aspidosperma oblongum*, representing 3.1% of the species (32 species in Region) of Apocynaceae to treat cataract.

Plants used to treat chicken pox (Tables 51, 52 & 53)

The Patamona Indians use the following plants to treat chicken pox: *Adiantopsis radiata*, *Aegiphilia integrifolia*, *Ageratum conyzoides*, *Ampelocera edentula*, *Anacardium occidentale*, *Aspidosperma oblongum*, *Aspidosperma sandwithianum*, *Carapa guianensis*, *Corchorus hirtus*, *Desmoncus polyacanthus*, *Eryngium foetidum*, *Ichthyothere terminalis*, *Irlbachia alata*, *Irlbachia purpurascens*, *Lantana camara*, *Licania densiflora*, *Lygodium micans*, *Mikania micrantha*, *Moronobea coccinea*, *Panopsis* sp. *Pavonia fruticosa*, *Pithecellobium laetum*, *Poraqueiba serica*, *Sida cordifolia*, *Stachytarpheta cayennensis*, *Toulicia guianensis* and *Trichilia pallida*. These species represent 7.12% of the medicinal flora and 1.42 % of the flora of the Region.

Even though chicken pox and small pox are different, the Patamona treat them as the same disease. *Humiria balsamifera* is used by a mixed group at Kurupukari to treat small pox (Johnston & Colquhoun, 1996).

Along coastal Guyana, other groups use decoctions of the stems and leaves of *Quassia amara*, infusions of aerial parts of *Cassia alata*, *Cassia bicapsularis* and *Crotalaria pallida* and oil from the seed of *Carapa guianensis* to treat chicken pox. (Latchman-White *et al.*, 1987).

Plants used to treat colds (Tables 54 & 55)

The Patamona Indians use the following species to treat colds: *Acacia paniculata*, *Achryanthes aspera* var. *indica*, *Aristolochia hians*, *Astronium ulei*, *Baccharis varians*, *Banisteriopsis lucida*, *Brosimum* cf. *lactescens*, *Brosimum guianense*, *Brosimum paraense*, *Brosimum utile*, *Byrsonima pachypoda*, *Calyptranthes pulchella*, *Chenopodium ambrosioides*, *Citrus aurantifolia*, *Citrus limon*, *Costus claviger*, *Costus erythrothyrus*, *Cymbopogon citratus*, *Drymaria cordata*, *Duguetia cauliflora*, *Duguetia pycnastera*, *Eryngium foetidum*, *Eugenia anastomosans*, *Eugenia punicifolia*, *Eugenia tafelbergica*, *Guarea gomma*, *Hyptis mutabilis*, *Lantana camara*, *Myroxylon peruferum*, *Nicotianum tobacum*, *Oplismenus* sp., *Palicourea rigida*, *Panicum rudgei*, *Phyla* sp., *Poraqueiba serica*, *Scoparia dulcis*, *Simarouba amara*, *Siparuna guianensis*, *Stigmaphyllon fulgens*, *Tradescantia zebrina*, *Trattinickia burserifolia*, *Wedelia fruticosa* and *Zingiber officinale*. These species represent 11.26% of the medicinal

plants and 2.33% of the flora of the Region.

The Warao use *Aloe vulgaris* Lam., *Anacardium occidentale*, *Capraria biflora* L., *Citrus limon*, *Citrus sinensis* (L.) Osbeck, *Cocos nucifera* L., *Crepidospermum rhoifolium*, *Cymbopogon citratus*, *Lantana camara*, *Lippa alba* and several other species to treat colds (Reinders, 1993). Other groups in French Guiana and Brazil use *Clibadium surinamensis*, *Costus scaber*, *Costus guianensis* Rusby var. *macrostrobilus*, *Eryngium foetidum*, *Eugenia uniflora*, *Lippa alba*, *Passiflora foetida*, *Siparuna guianensis* and *Wedelia trilobata* to treat colds (Grenand *et al.*, 1987; Milliken *et al.*, 1997).

Plants used to treat cold sweat (Tables 56 & 57, Figure 23)

The Patamona Indians use 12 species in 9 families to treat cold sweat. These species represent 3.42% of the medicinal plants and 0.66% of the flora of the Region. The species are *Achyranthes aspera*, *Banisteriopsis lucida*, *Banisteriopsis* sp., *Brunfelsia guianensis*, *Duguetia pycnastera*, *Lantana camara*, *Ocotea guianensis*, *Pavonia fruticosa*, *Piriqueta cistoides*, *Pteridium aquilinum*, *Stigmaphyllon fulgens* and *Stigmaphyllon sinuatum*..

Plants used to treat conjunctivitis (Table 58, Figure 24)

Acacia paniculata (Mimosaceae), *Axonopus anceps* (Poaceae), *Cissampelos pareira* (Menispermaceae), *Drypetes variabilis* (Euphorbiaceae) and *Hyptis lantanifolia* (Lamiaceae), are used to treat conjunctivitis. These species represents 1.45% of the medicinal flora and are 0.28% of the flora in the Region. Among the families used

6.95% are Euphorbiaceae, 35.40% are Lamiaceae, 47.21% are Menispermaceae, 7.65% are Mimosaceae and 2.83% are Poaceae .

Plants use to treat coughs (Tables 59 & 60, Figure 25)

The Patamona Indians use the following species to treat coughs: *Achryanthes aspera* var. *indica*, *Aristolochia hians*, *Astronium ulei*, *Brosimum* cf. *lactescens*, *Brosimum paraense*, *Byrsonima pachypoda*, *Chenopodium ambrosioides*, *Citrus aurantifolia*, *Citrus limon*, *Costus erythrorhynchus*, *Cymbopogon citratus*, *Duguetia cauliflora*, *Ernestia glandulosa*, *Guarea gomma*, *Lantana camara*, *Miconia alata*, *Oplismenus* sp., *Phyllanthus* sp., *Psidium guianense*, *Scoparia dulcis*, *Stigmaphyllon fulgens*, *Wedelia fruticosa* and *Zingiber officinale* . These species represent 1.26% of the flora of the Region.

The Arawak, Caribs and Warao Indians use *Pityrogramma calomelanos* (Pteridaceae) and *Capsicum frutescens* to treat coughs (Latchman-White *et al.*, 1987; Reinders, 1993). The Yanomami use *Peperomia rotundifolia* (L.) Kunth., *Phlebodium decumanum* Willd., *Protium unifoliatum* Spruce ex Engel, and *Siparuna guianensis* to treat coughs (Milliken & Albert, 1996). The Ka'apor and Tikuna use several species of Burseraceae including *Protium unifoliatum* to treat the same infection (Balée, 1994; Schultes & Raffauf, 1990). The Wayapi of French Guiana also use *Peperomia rotundifolia* to treat colds (Grenand *et al.*, 1987).

Plants used to treat cracked heels (Tables 61 & 62)

Four species, *Anacardium occidentale*, *Clusia nemorosa*, *Havetiopsis flavida*, and

Virola sebifera are used to treat a cracked heel. These represent 1.18% of the medicinal flora and 0.22% of the flora of the Region. The percent species in the respective families in the Region used are 14.29% Anacardiaceae, 6.06% Clusiaceae and 50.0% Myristicaceae.

Plants used to treat superficial cuts (Tables 63, 64 & 65, Figure 26)

The Patamona Indians use the following species to treat superficial cuts: *Anthurium* sp., *Apartisthmium cordatum*, *Calyptranthes pullei*, *Clusia grandiflora*, *Clusia nemorosa*, *Eperua falcata*, *Eschweilera sagotiana*, *Genipa spruceana*, *Jacaranda copaia*, *Mabea caudata*, *Oryctanthus florulentus*, *Oxandra* sp., *Pedilanthus tithymaloides*, *Pentaclethra macroloba*, *Phoradendron crassifolium*, *Pteridium aquilinum* and *Scleria arundinacea*. These species represent 0.93% of the flora of the Region.

Other plants used to treat cuts and wounds are *Allamanda cathartica*, *Anacardium occidentale*, *Cecropia* sp., *Copaifera duckei*, *Copaifera reticulata*, *Cucurmia zanthorrhiza* Roxb., *Davilla rugosa*, *Eschweilera* sp., *Gustavia angusta*, *Jatropha gossypifolia*, *Lippa micromera*, *Manihot escuelenta*, *Maximiliana maripa*, *Momordica charantia*, *Musa paradisiaca* L., *Musa* sp., *Pentaclethra macroloba*, *Pityrogramma calomelanos*, *Sida rhombifolia*, *Spondias mombin*, *Symphonia globulifera* and *Vatairea guianensis* (Balée, 1994; Johnston & Colquhoun, 1996; Reinders, 1993).

Plants used as a decongestant

Three species, *Poraqueiba serica* (Icacinaceae), *Protium sagotianum* and *Trattinickia*

burserifolia (Burseraceae) are used nasal decongestants by the Patamona Indians. This represent 0.88% of the medicinal species and 0.17% of the flora of the Region. It is 22.22% of the species of Burseraceae and 25.0% of the species of Icacinaceae found in Region. The Ka'apor snort the bark shavings of *Ampelocera edentula* and the resin of *Protium polybotryum* to treat this infection (Balée, 1994).

Plants used to treat dermatitis (Tables 66, 67 & 68)

The Patamona Indians use *Aegiphilia integrifolia*, *Ampelocera edentula*, *Anacardium occidentale*, *Aspidosperma album*, *Canna indica*, *Carapa guianensis*, *Corchorus hirtus*, *Coussarea* cf. *paniculata*, *Fagara apiculata*, *Genipa spruceana*, *Ichthyothere terminalis*, *Justicia calycina*, *Lygodium micans*, *Myricaria amazonica*, *Renealmia floribunda*, *Stachytarpheta cayennensis*, *Trichilia pallida*, *Vismia amazonica* and *Vismia angusta* to treat dermatitis. These species represent 5.83% of the medicinal species and 1.15% of the flora of the Region.

The Warao use *Carapa guianensis*, *Cassia alata*, *Mikania congesta* DC., *Tephrosia sinapou* and *Vatairea guianensis* for the same purpose (Reinders, 1993).

Plants used to treat diabetes (Figure 27)

The Patamona Indians use *Annona hypoglauca* to treat diabetes. A decoction of the leaves is drunk. Mixed groups on the coast and the Warao use *Averrhoa bilimbi* L., *Carica papaya*, *Momordica charantia*, *Scoparia dulcis*, *Siparuna guianensis* and *Syzygium cumini* to treat diabetes (Latchman-White *et al.*, 1987; Reinders, 1993).

Plants used to treat diaper rash

Two species *Anacardium occidentale* and *Bryophyllum pinnatum* are used to treat diaper rash. These species represent 14.29% of Anacardiaceae and 100% of Crassulaceae in flora of the Region.

Plants used as diuretic agent

The Patamona Indians use 1 species of Cucurbitaceae, *Momordica charantia* to treat kidney disorders. A decoction of *Momordica charantia* is drunk to flush the kidneys by increasing urination. Reinders (1993) mentioned the use of *Cecropia* sp., *Commelina* sp., and *Tripogandra* sp. for treating kidney disorders by the Warao.

Plants used to treat drooling in babies (Table 69)

The species used to treat drooling are *Brachypterys ovata* (Malpighiaceae), *Cordia nodosa* (Boraginaaceae) and *Pentaclethra macroloba* (Mimosaceae). According to Mrs. L. Williams at Kamana, the fruits of *Cordia nodosa* are preferred.

Plants used to treat dry skin

The Patamona Indians use *Carapa guianensis* to treat dry skin. A mixed village at Kurupukari use *Cecropia* sp., *Mora excelsa*, *Quassia cedron* and *Tabernaemontana undulata* to treat various skin conditions (Johnston & Colquhoun, 1996).

Plants used to treat ear infections

The Patamona Indians use the following species to treat ear infections: *Costus arabicus*, *Costus claviger*, *Costus erythrophyllus* and *Gossypium barbadense*. These

species represent 60.0% of the Costaceae and 20.0% of the Malvaceae in the Region.

Other groups in Guyana use *Cocos nucifera*, *Gossypium barbadense* and *Allium* sp. for the same purpose (Johnston & Colquhoun, 1996; Reinders, 1993).

Plants used to treat eczema (Tables 70, 71 & 72, Figure 28)

Nineteen species in 15 families representing 1.04% of the flora in the Region are used to treat eczema. The species are *Aegiphilia integrifolia*, *Ampelocera edentula*, *Anacardium occidentale*, *Aspidosperma album*, *Canna indica*, *Carapa guianensis*, *Corchorus hirtus*, *Coussarea* cf. *paniculata*, *Fagara apiculata*, *Genipa spruceana*, *Ichthyothere terminalis*, *Justicia calycina*, *Lygodium micans*, *Mvricaria amazonica*, *Renealmia floribunda*, *Stachytarpheta cayenensis*, *Trichilia pallida*, *Vismia amazonica*, and *Vismia angusta*. The P-value obtained is 0.3240 which is not significant. The families Clusiaceae, Meliaceae, Rubiaceae and Verbenaceae show positive residuals in the regression analysis. Species in these families are more likely to be used for treating eczema.

Along coastal Guyana, an infusion of leaves and flowers of *Cassia alata*, macerated whole plant of *Cassia occidentalis* and *Desmodium adscendens*, the latex of *Vismia angusta* and an infusion of the bark of *Tabebuia insignis* are used (Latchman-White *et al.*, 1987). At Kurupukari, no plant is recorded as treatment for eczema. However, *Quassia cedron* and *Tabernaemontana undulata* are reported to be used for soothing skin irritations (Johnston & Colquhoun, 1996). In the northwest, *Carapa guianensis*, *Cassia*

alata, *Mikania micrantha*, *Tephrosia sinapou* (Buc'hoz)) A. Chev. and *Vatairea guianensis* are used (Reinders, 1993).

Plants used to treat edema

One species, *Bryophyllum pinnatum* (Crassulaceae) is used to treat edema. The Warao, however, are reported to have used 11 species to treat swellings (Reinders, 1993).

Plants used as emetics (Tables 73 & 74, Figures 29 & 30)

Eight species in 7 families representing 0.44% of the flora of the Region are used by the Patamona Indians to induce vomiting. The species are *Compsoneura* sp., *Lycopodiella cernua*, *Lygodium micans*, *Pentaclethra macroloba*, *Swartzia laevicarpa*, *Trichilia micrantha*, *Tripogandra serrulata* and *Virola sebifera*. The P-value obtained is 0.4580 which is not significant. The families Myristicaceae and Pteridophyta (Fern families) show positive residuals in the regression analysis. Species in these families are more likely to be used as an emetic.

Along coastal Guyana, the Arawak and Caribs use *Anacardium giganteum*, *Aristolochia* sp., *Cassia alata*, *Cassia occidentalis*, *Crescentia cujete*, *Guarea guidona*, *Pentaclethra macroloba*, *Renealmia alpinia* and *Wedelia trilobata* as emetic (Latchman-White *et al.*, 1987). At Kurupukari, a mixed Amerindian village, *Trattinickia* sp. is used as an emetic (Johnston & Colquhoun, 1996).

Plants used as emollient agents (Tables 75, 76 & 77, Figure 31)

The Patamona use species in 18 families, representing 1.15% of the flora of the

Region, primarily as a poultice to soften the body surface or as emollient agents. The species used are *Abuta* sp., *Anthurium crassinervium*, *Besleria penduliflora*, *Bryophyllum pinnatum*, *Combretum* sp., *Crinum erubescens*, *Didyopanax morototonii*, *Eschweilera sagotiana*, *Himatanthus bracteatus*, *Hyptis pectinata*, *Irlbachia alata*, *Lomagramma* sp., *Oryctanthus florulentus*, *Passiflora glandulosa*, *Passiflora* sp., *Pedilanthus retusus*, *Phoradendron piperoides*, *Pourouma cecropiaefolia*, *Psychotria capitata*, *Pteridium aquilinum*, *Rhodspatha venosa* and *Tovomita calodictyos*. The P-value obtained is 0.2448 which is not significant. The families Araceae, Loranaceae and Pteridophyta show positive residuals in the regression analysis. Species in these families are more likely to be used as emollient agents.

Plants used to treat eye infections (Tables 78, 79 & 80)

The Patamona use the following species to treat eye infections: *Acacia paniculata*, *Ampelocera edentula*, *Arrabidaea patellifera*, *Aspidosperma album*, *Aspidosperma excelsum*, *Aspidosperma oblongum*, *Bidens cyanapiifolia*, *Cissampelos pareira*, *Drypetes variabilis*, *Hyptis lantanifolia*, *Passiflora vespertilo*, *Scoparia dulcis*, *Vismia cayennensis* and *Vismia guianensis*. These species represent 3.97% of the medicinal plants and 0.77% of the flora of the Region.

The people in a mixed village at Kurupukari use *Stigmaphyllon sinuatum* to treat eye infections (Johnston & Colquhoun, 1996). The Warao use *Bidens cyanapiifolia*, *Cajanus cajan*, *Centropogon cornutus*, *Coleus amboinicus*, *Cyperus ligularis*, *Gossypium*

barbadense, *Heliotropium indicum*, *Ipomea* sp., *Kalanchoe pinnatum*, *Marcgravia coriacea*, *Martinella obovata*, *Musa* sp., *Ocimum* sp., *Pityrogramma calomelanos* and *Psidium guajava* (Reinders, 1993). The Ka'apor use *Cayaponia* sp., *Guariania eriantha*, *Hymenaea parviflora*, *Schubertia grandiflora* and *Uncaria guianensis* for the same purpose (Balée, 1994).

Plants used to increase fertility

The Patamona Indians drink a decoction of *Phthirusa retroflexa* (Loranthaceae) as a treatment for infertility. The Waro use *Bromelia alta* L.B. Smith (Bromeliaceae) and *Microtea debilis* Sw. (Flacourtiaceae) to prevent abortion (Reinders, 1993).

Plants used as fish poison (Table 81 & 82, Figure 32)

The following species are used as fish poison by the Patamona Indians; *Abuta imene*, *Furcraea foetida*, *Anaxagorea dolichocarpa*, *Cordia polycephala*, *Hymenolobium nitidum*, *Indigofera* sp., *Lonchocarpus* cf. *floribundus*, *Lonchocarpus* cf. *hedyosmus*, *Lonchocarpus* cf. *latifolius*, *Lonchocarpus* sp., *Paullinia acuminata*, *Paullinia latifolia*, *Paullinia rufescens* and *Pentaclethra macroloba*. This represents 4.13% of the medicinal species and 0.78% of the flora in the Region. The P-value is 0.2671 and is not significant. Species in the Fabaceae and Sapindaceae plant families show positive residuals in the regression analysis. Therefore species in these families are more likely to be used by the Patamona as fish poison plants.

Along coastal Guyana, *Lonchocarpus chrysophyllus* and *Mora excelsa* are used

(Latchman-White *et al.*, 1987). At Kurupukari, *Bauhinia kunthiana* Vogel, *Caryocar macrocarpum* Ducke, *Cissus erosa* L.C. Rich., *Clibadium sylvestre* Baill., *Paullinia* sp., *Talasia squarrosa* Radkl. and *Tapura guianensis* Aubl. are used for fishing (Johnston & Colquhoun, 1996).

In the Amazonian forest, the Ka'apor use *Psychotria colorata* fruits and *Ricinus comunis* seeds as bait for fishing. *Clibadium sylvestre*, *Derris utilis*, *Serjania aff. lethalis*, *Syagrus* sp. and *Tephrosia sinapou* as fish poison plants (Balée, 1994). In Colombia and Ecuador, *Clibadium* sp., *Enterolobium* sp., *Lonchocarpus* sp., *Minquartia guianensis*, *Phyllanthus* sp., *Polygonum hydropiperoides*, *Sapium* sp., *Schoenobiblus peruvianus*, *Swartzia auriculata*, and *Tephrosia nicou*, are used by the Colorado, Cayapa, Cofan, Siona-Secoya, Quichua, Waorani and the Shuar-Achuar Indians (Kvist & Holm-Nielsen, 1987). The Chácobo of Bolivia use *Derris amazonica* as fish poison (Boom, 1987).

Plants used to flavor food (Tables 83, 84 & 85)

The species used to flavor food are *Bixa orellana*, *Capsicum* sp., *Cestrum latifolium*, *Eryngium foetidum*, *Hyptis mutabilis* and *Zingiber officinale*. They represent 0.33% of the flora of the Region. The P-value is 0.6719 and is not significant. The Apiaceae, Bixaceae and Solanaceae show positive residuals in the regression analysis. Species of these families are more likely to be used.

The people at Kurupukari use *Dipteryx odorata* Willd. and *Odontadenia nitida*

Muell. Arg. to flavor food (Johnston & Colquhoun, 1996).

Plants used to treat fungal infections (Tables 86 & 87, Figures 33, 34)

Species in 24 families are used to treat fungal infections. These include *Justicia calycina*, *Alzatea verticillata*, *Anacardium occidentale*, *Aspidosperma album*, *Aspidosperma oblongum*, *Himatanthus bracteatus*, *Himatanthus drasticus*, *Didyopanax morototonii*, *Elephantopus mollis*, *Pterocaulon virgatum*, *Bixa orellana*, *Dacryodes nitens*, *Vismia amazonica*, *Vismia angusta*, *Vismia cayenensis*, *Vismia guianensis*, *Vismia japurensis*, *Bryophyllum pinnatum*, *Clathrotropis macrocarpa*, *Irlbachia alata*, *Hyptis lantanifolia*, *Carapa guianensis*, *Trichilia pallida*, *Abarema jupunba*, *Siparuna guianensis*, *Myricaria amazonica*, *Calyptanthus pullei*, *Bocconia pearcei*, *Olyra latifolia*, *Genipa spruceana*, *Fagara apiculata*, *Corchorus hirtus*, *Stachytarpheta cayensis* and *Renealmia floribunda*. This is 9.12% of the medicinal flora and 1.85% of the flora of the Region. The two families most widely used are the Apocynaceae and Clusiaceae. The P-value obtained from the line of best fit is 0.5739, and is not significant. The families Apocynaceae, Asteraceae, Clusiaceae, Meliaceae and Myrtaceae show positive residuals in the regression analysis. Therefore, species in these families are more likely to be used for treating fungal infections.

The use of *Vismia* sp. to treat fungal infections in Brazil, Colombia and French Guiana are well documented (Milliken & Albert, 1996; Schultes & Raffauf, 1990; Grenand *et al.*, 1987; Branch & Silva, 1983).

Plants used to treat lotta, a particular fungal skin infections

The Patamona Indians use *Calypttranthes pullei* representing 2.63% of the Myrtaceae in the Region to treat lotta. Lotta is a fungal infection of the skin characterized by skin discoloration and itching. The Warao use the latex from the bark of *Vismia macrophylla* to treat this infection (Reinders, 1993).

Medicament for hair growth (hair nourishment)

The Patamona Indians use one species, *Hymenocallis tubiflora* (Amaryllidaceae, 5 species in Regional flora), as treatment to encourage hair growth.

Hallucinogenic plants (Table 88)

The Patamona Indians use *Nicotiana tabacum* and *Scutellaria* sp. as mind altering plants. The use of *Nicotiana tabacum* is associated with shamanistic works (rituals associated with healing a sick individual) as was evident at Chiung village.

Latchman-White *et al.* (1987) report that *Erythroxylum coca* is used as a hallucinogen. Kvist and Holm-Nielsen (1987) discuss the use of *Alternanthera* sp., *Anthurium* sp., *Banisteriopsis caapi*, *Banisteriopsis muricata*, *Banisteriopsis longiolata*, *Brugmansia* sp., *Brunfelsia* sp., *Dictyonema* sp., *Diplopterys cabrerana*, *Justicia sterea*, *Piper variegatum*, *Psychotria viridis*, *Schoenobiblus panamensis*, *Rinorea viridiflora* and as hallucinogenic plants by indigenous peoples of lowland Ecuador and Colombia.

Plants used to treat heartburn

The Patamona Indians use *Curatella americana* and *Pouteria venosa* to treat

heartburn. These species represent 11.11% of the Dilleniaceae and 7.69% of the Sapotaceae found in the Region respectively.

Medicament for heart disorders, including fluttering of the heart

A decoction of the leaves of *Annona muricata* and *Pouteria venosa* is used to treat fluttering of the heart. *Rollinia excussa* is also used to treat heart disorders. The 2 species used represent 9.09% of the Annonaceae in the Region.

Other groups along the coast use *Achryanthes aspera*, *Annona muricata*, *Carica papaya* and *Peperomia pellucida* to treat heart disorders (Latchman-White *et al.*, 1987). The Warao use *Crescentia cujete* and *Stigmaphyllon* sp. to treat heart conditions (Reinders, 1993).

Plants used to treat hepatitis (Figures 35 & 36)

Three species, *Curatella americana*, *Momordica charantia* and *Protium sagotianum* are used to treat hepatitis. They represent 0.89% of the medicinal species used. A decoction of the aerial parts is drunk.

Plants used for herbal baths (Tables 89, 90 & 91, Figures 37 & 38)

The Patamona Indians use 32 species of plants for herbal baths. The baths taken could be for tiredness, to cure a sickness or as a charm. The plants could be used either singly or in combination with other plants. An infusion or a decoction of the plant is used. The species used are *Achyranthes aspera*, *Ageratum conyzoides*, *Aristolochia hians*, *Astronium ulei*, *Bactris gassipaes*, *Banisteriopsis lucida*, *Brunfelsia guianensis*,

Chenopodium ambrosioides, *Cyathula prostrata*, *Dacryodes nitens*, *Desmoncus polyacanthus*, *Drypetes variabilis*, *Duguetia pycnastera*, *Duguetia* sp., *Eryngium foetidum*, *Gossypium brasiliense terminalis*, *Lantana camara*, *Lygodium micans*, *Moronobea coccinea*, *Ocotea guianensis*, *Palicourea rigida*, *Pavonia fruticosa*, *Piper peltatum*, *Piriqueta cistoides*, *Scoparia dulcis*, *Sida cordifolia*, *Siparuna guianensis*, *Solanum subinerme*, *Stachytarpheta cayennensis*, *Stigmaphyllon fulgens*, *Stigmaphyllon sinuatum* and *Turnera rupestris*. The P-value is 0.5178 and is not significant.

Along the coastal Guyana, an infusion of the bark and leaves of *Lonchocarpus chrysophyllus*, leaves of *Ricinus comunis* and stem / leaves *Stigmaphyllon fulgens* are used by the Arawak and Caribs (Latchman-White *et al.*, 1987).

Plants used to treat hypertension (Tables 92, 93 & 94)

The Patamona Indians use 9 species in 7 families, representing 2.59% of the medicinal species and 0.50% of the flora of the Region to treat hypertension. The species are *Annona hypoglauca*, *Annona muricata*, *Duguetia cauliflora* (Annonaceae), *Carica papaya* (Caricaceae), *Momordica charantia* (Cucurbitaceae), *Persea americana* (Lauraceae), *Struthanthus dichoranthus* (Loranthaceae), *Byrsonima crassifolia* (Malpighiaceae) and *Piper peltatum* (Piperaceae). The P-value is 0.4443, and is not significant. The families Annonaceae and Caricaceae show positive residuals in the regression analysis. Those species in these two families are more likely to be used as anti-hypertensive plants. Of these, only *Carica papaya* and *Annona muricata* (plus

another 10 species) are used by the Warao (Reinders, 1993) and *Carica papaya*, *Annona muricata* and *Persea americana* (plus another 5 species) are used along coastal Guyana (Latchman-White *et al.*, 1987).

Plants used to treat an itchy scalp (Figures 39 & 40)

The Patamona Indians use 3 species, *Abarema jupunba*, *Alzatea verticillata* and *Clerodendron cf. thompsonae* to treat itchy scalp. The Warao use *Tripogandra serrulata* as shampoo to treat the same infection (Reinders, 1993).

Plants used to treat impotence (Tables 95, 96 & 97)

Seven species in 3 families are used to treat impotence. The most common family used is the Dilleniaceae: 4 of the 9 species in family is used. They are *Davilla kunthii*, *Doliocarpus macrocarpus*, *Doliocarpus savannarum*, *Doliocarpus sparguei*, *Pinzoa coriacea*, *Smilax lasseriana* and *Tovomita schomburgkii*. These species represent 2.06% of the medicinal species and 0.39% of the flora of the Region.

Plants used as incense

The Patamona Indians use 4 species of Burseraceae representing 1.17% of the medicinal plants as incense. The species are *Dacryodes nitens*, *Protium neglectum*, *Protium sagotianum* and *Trattinickia burserifolia*. These species represent 44.44% of the species of the family (4 of 9 species used) in the Region.

Plants used to treat influenza (Tables 98, 99 & 100, Figures 41 & 42)

The Patamona Indians use *Achryanthes aspera*, *Anacardium occidentale*, *Bactris*

gassipaes, *Cymbopogon citratus*, *Panicum rudgei* and *Scoparia dulcis* to treat influenza.

These species are also used by the Warao to treat fevers and influenza (Reinders, 1993).

Plants used as insect repellants (Table 101)

The Patamona Indians use 4 species *Baccharis varians*, *Jacarandia copaia*, *Carapa guianensis* and *Hyptis pectinata* as insect repellent plants. This is 1.17% of the medicinal species and 0.22% of the flora in the Region.

The Ka'apor and the Warao also use *Carapa guianensis* as an insect repellent (Balée, 1994; Reinders, 1993).

Plants used as insecticides (Tables 102 & 103)

In the Region, the Patamona Indians use 4 species, *Carapa guianensis*, *Corchorus hirtus*, *Genipa spruceana* and *Indigofera* sp. as insecticidal plants. This is 1.45% of the medicinal species and 0.22% of the flora of the Region.

One species in the Flacourtiaceae, *Ryania speciosa* Vahl. is used at Kurupukari (Johnston & Colquhoun, 1996) and 3 species, *Clathotropis brachypetala*, *Cordia curassavica* and *Simaba cedron* are used along coastal Guyana (Latchman-White *et al.*, 1987).

Plants used to treat intestinal cramps

The Patamona Indians drink a decoction of the roots of *Solanum* sp. to treat intestinal cramps.

Plants used as intoxicants (Table 104)

Three species representing 0.88% of the medicinal species and 0.17% of the flora of the Region are used as intoxicants. The species are *Erythroxylum* sp., *Nicotiana tabacum* and *Tovomita calodictyos*.

Plants used to treat jaundice (Figure 43)

Five species representing 1.45% of the medicinal species and 0.28% of the flora of the Region are used to treat jaundice. The species are *Curatella americana*, *Drymaria* sp., *Irlbachia alata*, *Momordica charantia* and *Protium sagotianum*.

Mixed Amerindian villages along the coast use a decoction of *Scoparia dulcis*, or a decoction of several leaves of *Tripogandra serrulata*, *Persea americana*, *Scoparia dulcis* and *Cymbopogon citratus* to treat the same infection (Latchman-White *et al.*, 1987). The Warao use *Cocos nucifera* and *Tripogandra serrulata* to treat jaundice (Reinders, 1993).

Plants used as laxatives

The Patamona Indians use *Irlbachia alata*, *Irlbachia alata* subsp. *alata* and *Irlbachia purpurascens* as laxative. A decoction of leaves is drunk.

Along coastal Guyana, mature seed of *Carica papaya*, blossoms and pods of *Cassia alata* and oil from the seed of *Ricinus communis* are used (Latchman-White *et al.*, 1987).

Plants used to treat lesions / blisters

The Patamona Indians use *Bixa orellana* to treat lesions and blisters.

Plants used to treat liver infections

The Patamona Indians use *Gossypium barbadense* (Malvaceae) to treat liver infections. The people in a mixed village at Kurupukari use *Lecythis zabucajo* Mart. to treat liver disorders (Johnston & Colquhoun, 1996).

Plants use to treat malarial infections (Table 106, Figure 44)

Malaria is one of the most serious diseases of the Patamona people. Because the villages are isolated and drugs are not available to treat this disease, the Patamona must use the forest resources. This accounts for the high number of species used. Thirty-seven species in 21 families are used as anti-malarial plants. This represent 2.01% of the flora in the Region. Among the species widely used are *Duguetia cauliflora* (Annonaceae); *Eryngium foetidum* (Apiaceae); *Aspidosperma album*, *Aspidosperma excelsum*, *Aspidosperma oblongum*, *Aspidosperma sandwithianum*, *Aspidosperma ulei*, *Himatanthus articulatus*, *Himatanthus bracteatus* and *Himatanthus drasticus* (Apocynaceae); *Euterpe precatoria* (Arecaceae); *Bidens cynapiifolia*, *Chaptalis integerrima* and *Wedelia trilobata* (Asteraceae); *Carica papaya* (Caricaceae); *Drymaria* sp. (Caryophyllaceae); *Cecropia angulata* (Cecropiaceae); *Rhynchospora barbata* (Cyperaceae); *Croton* sp. (Euphorbiaceae); *Eriosema crinitum* (Fabaceae); *Psittacanthus lasianthus* (Loranthaceae); *Byrsonima pachypoda*, *Byrsonima verbascifolia* and *Stigmaphyllon sinuatum* (Malpighiaceae); *Carapa guianensis* (Meliaceae); *Siparuna guianensis* (Monimiaceae); *Trichomanes arbuscula* (Pteridophyta); *Zanthoxylum*

rhoifolium (Rutaceae); *Toulicia guianensis* (Sapindaceae); *Solanum crinitum*, *Solanum leucocarpon*, *Solanum nigrum*, *Solanum paludosum*, *Solanum scandens* and *Solanum stramonifolium* (Solanaceae) and *Lantana camara* (Verbenaceae). On a scattergram, regression analysis and line of best fit gave a P-value of 0.5826 which is not significant. The families Apocynaceae, Asteraceae, Malpighiaceae and Solanaceae show positive residuals. Therefore, species in these families are more likely to be used for treating malaria.

Reinders (1993) listed 12 species that are used by the Warao as anti-malarial plants. Both groups use *Solanum stramonifolium*, *Eryngium foetidum* and *Aspidosperma oblongum*. In the state of Roraima, Brazil, 99 species in 41 families are used to treat malaria (Milliken, 1997). Species used that are also used by the Patamona Indians for the same purpose are *Aspidosperma excelsum*, *Himatanthus articulatus*, *Carica papaya*, *Bidens cynapiifolia*, *Croton* sp., *Cecropia* sp., *Byrsonima* sp., *Siparuna guianensis* and *Solanum* sp. Johnston and Colquhoun (1996) reported the use of *Siparuna guianensis* and 6 other species for treating malaria at Kurupukari, a mixed Amerindian village in central Guyana. *Lantana camara*, *Mikania micrantha*, *Momordica charantia* and *Quassia amara* are also used to treat malaria along the coast of Guyana (Latchman-White et al., 1987).

Plants used to treat measles (Tables 107, 108 & 109)

The Patamona Indians use the following species to treat measles: *Adiantopsis radiata*,

Aegiphilia integrifolia, *Ageratum conyzoides*, *Ampelocera edentula*, *Anacardium occidentale*, *Carapa guianensis*, *Corchorus hirtus*, *Desmoncus polyacanthus*, *Eryngium foetidum*, *Ichthyothere terminalis*, *Irlbachia alata*, *Irlbachia purpurascens*, *Lantana camara*, *Licania densiflora*, *Lygodium micans*, *Mikania micrantha*, *Pavonia fruticosa*, *Pithecellobium laetum*, *Poraqueiba serica*, *Sida cordifolia*, *Stachytarpheta cayennensis*, *Toulicia guianensis* and *Trichilia pallida*.

Indigenous groups along the coast use *Carapa guianensis*, *Cassia alata*, *Crotalaria pallida* and *Quassia amara* to treat measles (Latchman-White *et al.*, 1987). The people at Kurupukari use *Stigmaphyllon sinuatum* to treat measles, while the Warao in the northwest use *Ipomoea* sp. for the same purpose ((Johnston & Colquhoun, 1996; Reinders, 1993). The Ka'apor use *Cucurma* sp. (Zingiberaceae) and the liana *Ampelozizyphus amazonicus* Ducke (Rhamnaceae) to treat measles (Balée, 1994).

Plants used to treat menstrual cramps

A decoction of the roots of *Byrsonima verbascifolia* is used to treat cramps during the menstrual cycle. This species represents 4.0% of the species of Malpighiaceae in the Region. A decoction of the roots of *Stigmaphyllon hypoleucum* Miq. is used for the same purpose by the Warao (Reinders, 1993).

Plants used to treat migraine / headache (Figures 45 & 46)

The Patamona Indians use *Aspidosperma excelsum*, *Rhynchospora barbata*, *Piper peltatum* and *Zingiber officinale* to treat migraine. These species represent 3.12% of

Apocynaceae, 1.37% of Cyperaceae, 4.55% of Piperaceae and 25.0% of Zingiberaceae in the Region respectively.

The Warao use *Carapa guianensis*, *Doliocarpus dentatus*, *Eryngium foetidum*, *Heliconia bihai*, *Hymenocallis tubiflora*, *Jatropha gossypifolia*, *Manicaria saccifera*, *Physalis pubescens*, *Potomorphe peltata* and *Quassia amara* to treat headache (Reinders, 1993).

Plants used to treat mumps

The Patamona Indians use *Carapa guianensis* (14.29 % Meliaceae in Region) and *Crinum erubescens* (20.0% Amaryllidaceae in Region) to treat mumps.

Plants used as a muscle relaxants

The Patamona Indians use *Anaxagorea dolichocarpus* (4.55% of the Annonaceae) as a muscle relaxant.

Plants use to treat muscular aches and pains (Tables 110, 111 & 112, Figure 47)

An unidentified Asteraceae, *Anacardium occidentale*, *Cipura* sp., *Dacryodes nitens*, *Duguetia pycnastera*, *Lippia* sp., *Mouriri* sp., *Palicourea guianensis*, *Piper acutifolium*, *Piper arboreum*, *Piper hostmannianum*, *Piper lancifolia*, *Piper obliquum*, *Piper rupunnunianum*, *Portulaca oleracea* and *Ricinus cuminis* are species used by the Patamona Indians to treat muscular aches and pains. These species represent 0.88% of the flora of the Region.

The Warao use *Anacardium occidentale*, *Bauhinia guianensis*, *Centropogon*

cornutus, *Citrus sinensis*, *Cymbopogon citratus*, *Desmodium adscendens*, *Doliocarpus dentatus*, *Hymenaea courbaril*, *Jatropha curcas*, *Nicotiana tabacum*, *Renealmia alpinia*, *Sabicea aspera* and *Urena lobata* to treat body pains (Reinders, 1993).

Plants used to treat nasal blockage

Poraquiba sericea (25.0% of Icacinaceae) is used to open the nasal passageway.

Plants used as purgatives (Table 113)

The Patamona Indians use *Lycopodiella cernua* ssp. *cernua* and *Tabebuia subtilis* as purgative. Mixed groups along the coast use *Byrsonima coriacea* var. *spicata*, *Pothomorphe peltata* and *Tripogandra serrulata* as purgatives (Latchman-White *et al.*, 1987). The Amerindians of Kurupukari village use *Protium guianense* March. as a purgative (Johnston & Colquhoun, 1996).

Plants used to treat rheumatism

One species, *Unonopsis rufescens* representing 4.55% of the Annonaceae in the Region, is used to treat rheumatism. The people at Kurupukari use *Carapa guianensis* and *Ormosia coutinhoi* Ducke, for the same purpose (Johnston & Colquhoun, 1996). The Ka'apor use a variety of *Manihot esculenta* to treat rheumatism (Balée, 1994).

Plants used to treat ringworm (Tables 114 & 115, Figures 48 & 49)

The Patamona Indians use 2.31% of the medicinal species to treat ringworm. The species used are *Calyptranthes pullei*, *Didymopanax morototoni*, *Genipa americana*, *Irlbachia alata*, *Justicia calycina*, *Vismia amazonica* and *Vismia angusta*.

The Indians of Kurupukari use *Vatairea guianensis* to treat ringworm (Johnston & Colquhoun, 1996). The Warao use *Musa* sp., *Vatairea guianensis* and *Vismia macrophylla* for this purpose (Reinders, 1993).

Plants used to treat scabies

The Patamona Indians use 1 species, *Crinum erubescence* representing 20.0 % of Amaryllidaceae in the Region, to treat scabies. The Warao use *Cassia alata* to treat scabious infections (Reinders, 1993).

Plants used to treat a burning sensation of the skin

Stigmaphyllon fulgens is used by the Patamona Indians to treat a burning sensation of the skin. Amerindians along the coast use *Peperomia pellucida* for the purpose (Latchman-White *et al.*, 1987). It is believed that both these plants have a cooling effect on the body.

Plants used to treat scaling skin (Figures 50 & 51)

The Patamona use *Cararipa guianensis*, *Vismia angusta* and *Vismia cayennensis* to treat scaling skin.

Plants used as shampoo (Tables 116, 117 & 118, Figure 52)

The Patamona Indians use 9 species in 8 families, representing 2.59% of the medicinal species and 0.50% of flora of the Region, as shampoo. The species used are *Abarema jupunba*, *Alzatea verticillata*, *Anacardium occidentale*, *Bryophyllum pinnatum*, *Clerodendron cf. thompsonae*, *Furcraea foetida*, *Olyra latifolia*, *Vismia angusta* and

Vismia cayennensis.. The Warao use *Tripogandra serrulata* as a shampoo (Reinders, 1993).

Plants used to treat skin conditions (Table 119, Figure 53)

The Patamona use *Abuta* sp., *Bixa orellana*, *Brosimum alicastrum* and *Mikania micrantha* to treat skin conditions. These species represent 1.17% of the medicinal species and 0.22% of the flora of the Region.

The people of Kurupukari use *Tabernaemontana undulata*, *Mora excelsa*, *Cecropia* sp. and *Quassia cedron* to treat skin conditions (Johnston & Colquhoun, 1996).

Plants that are skin irritants (Table 120, 121 & 122)

Six species in 4 families, representing 1.45% of the medicinal species and 0.33% of the flora of the Region, cause skin irritation. The species are *Amanoa campestris*, *Amanoa* cf. *guianensis*, *Anthurium* sp., *Endlecheria multiflora*, *Micandra glabra* and *Mucuna urens*.

Plants used to treat skin spots

The Patamona Indians use *Renealmia floribunda* to treat skin spots.

Plants used to treat snakebite (Tables 123, 124 & 125)

The Patamona Indians use *Anacardium occidentale*, *Besleria penduliflora*, *Bulbostylis paradoxa*, *Cassia quinquangulata*, *Cassia apoucoutia*, *Citrus aurantifolia*, *Guatteria paludosa*, *Piper arboreum*, *Piper hostmannianum* and *Qualea albiflora* to treat snakebite. These species represents 2.87% of the medicinal species and 0.55% of the

flora in the Region. The P-value obtained from regression analysis is 0.4477 which is not significant. The families Caesalpiniaceae and Piperaceae show positive residual in the regression analysis. Species in these families are more likely to be used as anti-venom plants for treating snakebites.

Other indigenous groups in Guyana use *Bidens cynapiifolia*, *Byrsonima coriacea* var *spicata*, *Byrsonima aerugo*, *Carapa guianensis*, *Clathotropis brachypetala*, *Clusia fockeana*, *Lonchocarpus chrysophyllus*, *Marcgravia scandens*, *Mikania hookeriana*, *Mikania micrantha*, *Nicotiana tabacum*, *Parinari parvifolia* Sandw., *Pentaclethra macroloba*, *Simaba cedron* and *Tabernaemontana undulata* among others are used ((Latchman-White *et al.*, 1987; Reinders, 1993; Johnston & Colquhoun, 1996;). The Ka'apor use *Gustavia angusta* L. and *Poecilanthe effusa* to treat snakebite (Balée, 1994). In lowland Ecuador (Colorado, Cayapa, Coaiquer, Siona-Secoya, Quichua, Waorani, Shuar and Achuar Indians) several species of Gesneriaceae, Pteridophyta, Piperaceae among others are used to treat snakebite. It has also been suggested, that *Potalia amara* should be chemically investigated for anti-venom compounds (Kvist & Holm-Nielsen, 1987).

Plants used as soap (Table 126)

Furcraea foetida, *Cyathula prostrata* and *Abarema jupunba* are used as soap.

Plants used to treat sores (Tables 127 & 128, Figure 54)

The Patamona Indians use the following species to treat sores: *Aegiphilia*

integrifolia, *Anacardium occidentale*, *Aspidosperma album*, *Brosimum guianense*,
Bryophyllum pinnatum, *Canna indica*, *Carapa guianensis*, *Chrysophyllum* cf. *auratum*,
Cinchona sp., *Clusia grandiflora*, *Clusia nemorosa*, *Corchorus hirtus*, *Coussarea* cf.
paniculata, *Dacryodes nitens*, *Didyopanax morototoni*, *Eperua falcata*, *Eremoluna*
sagotiana, *Fagara apiculata*, *Genipa spruceana*, *Himatanthus bracteatus*, *Ichthyothere*
terminalis, *Irlbachia alata*, *Justicia calycina*, *Lantana camara*, *Licania densiflora*,
Lomagramma sp., *Mabea caudata* var. *concolor*, *Myricaria amazonica*, *Oryctanthus*
florulentus, *Pedilanthus retusus*, *Pera glabrata*, *Phoradendron piperoides*, *Piper*
aduncum, *Pithecellobium laetum*, *Renealmia floribunda*, *Solanum stramonifolium*,
Symphonia globulifera, *Ternstroemia punctata*, *Thevetia peruviana* and *Trichilia pallida*.

These species represent 10.55% of the medicinal plants of the Region.

Other groups use *Cecropia* sp., *Clathotropis macrocarpa*, *Coffea arabica*, *Crescentia*
cujete, *Elusine indica*, *Eperua falcata*, *Gossypium* sp., *Hypolepis* sp., *Jacaranda copaia*,
Licania alba, *Martinella obovata*, *Momordica charantia*, *Norantea guianensis* Aubl.,
Pentaclethra macroloba, *Schlegelia parviflora*, *Scoparia dulcis*, *Spondias mombin*,
Tabebuia insignis, *Vismia angusta* and *Wedelia trilobata* to treat sores. (Latchman-
White *et al.*, 1987; Johnston & Colquhoun, 1996; Reinders, 1993).

Plants used to treat sores in the mouth

The Patamona Indians use *Brosimum alicastrum* to treat sores in the mouth.

Mixed groups along the coast use *Scoparia dulcis* (Latchman-White *et al.*, 1987).

The Ka'apor use *Ambelania acida* Aubl., *Lacmellea aculeata*, *Viola michelii* and *Zingiber officinalis* to treat sore-mouth / throat (Balée, 1994).

Plants used to treat sore throat

The Patamona Indians chew the roots and swallow the juice of *Oplismenus* sp. as a treatment for sore throat. Amerindians along the coast drink a bark decoction of *Anacardium giganteum* (Latchman-White *et al.*, 1987). At Kurupukari, *Dipteryx odorata* Willd. is used and in the northwest, the Warao use *Wulffia baccata* to treat throat infections (Johnston & Colquhoun, 1996; Reinders, 1993).

Plants used to treat sprains (Table 129)

Three species *Crinum erubescens*, *Palicourea guianensis* and *Piper arboreum*, representing 0.89 % of the medicinal plants in the Region are used to treat sprains. The Warao use *Anans comosus*, *Clusia grandiflora*, *Cucurma zanthorrhiza*, *Hymenocallis rubiflora* and *Montricardia arborescens* for the same purpose (Reinders, 1993).

Plants used as a stimulants

Viola sebifera is used as a stimulant.

Plants used to treat sunburn

The Patamona Indians use the pulp of *Genipa spruceana* to treat sunburn.

Plants used as sunscreen lotion

Bixa orellana is used as sunscreen lotion.

Plants used to treat swollen intestines

The Patamona Indians use *Mouriri grandiflora* to treat swollen intestines. The Warao use *Capraira biflora* L., *Physalis pubescens* L. and *Potomorphe peltata* (L.) Miq. to treat the same infection (Reinders, 1993).

Plants used to treat syphilis (Table 130)

The Patamona use juice from the macerated leaves of *Crotalaria pilosa* and latex from *Vismia macrophylla* are used to treat syphilis.

Along the coast, other groups use young leaves of *Mikania micrantha* and the roots of *Phytolaca rivinoides* (Latchman-White *et al.*, 1987). The mixed group at Kurupukari village use another species, *Mikania hookeriana* to treat this infection (Johnston & Colquhoun, 1996).

Plants used to treat teeth infections (Tables 131 & 132)

The Patamona Indians use 1.74% of the medicinal species and 0.33% of the species of the Region to treat teeth infections. The species used are *Apeiba echinata*, *Argemone* sp., *Cassia apoucoutia*, *Ricinus communis*, *Solanum crinitum* and *Solanum macranthum*.

Other groups in Guyana use *Goupia glabra* and *Jatropha curcas* to treat this infection (Johnston & Colquhoun, 1996; Reinders, 1993). In lowland Ecuador, the Colorado Indians use *Chlorophora tinctoria* (L.) Gaud., *Clairisa recemosa* R. & P. and *Zingiber officinale* for the same purpose. The Coaquier Indians use *Achyranthes aspera* and *Spilanthes alba* L'Her. The Siona-Secoya Indians use *Trilena pluvialis* (Wurdack)

Wurdack, *Hyospathe elegans* Mart. and *Rinorea viridiflora* Rusby. The Quichua Indians use *Bauhinia* sp., *Piper obliquum* R. & P., *Spilanthes* sp. and *Virola* sp. to treat teeth infections (Kvist & Holm-Nielsen, 1987). The Ka'apor use *Piper ottonoides* Jun., *Piper piscatorum* Trel. & Jun., *Protium giganteum* Engl., *Protium pallidum* Quatrec., *Protium spruceanum* (Benth.) Engl. and *Zanthoxylum juniperina* Engl. for this purpose (Balée, 1994).

Plants used to treat thrush (Figures 55 & 56)

This is an infection associated with babies. The Patamona use *Bellucia pentamera*, *Gossypium barbadense*, *Musa* sp. and *Pentaclethra macroloba* are to treat thrush.

Along the coast and in the northwest, other groups treat thrush with *Achyranthes aspera*, *Aristolochia* sp., *Carapa guianensis*, *Crotalaria pallida*, *Eperua falcata*, *Hyptis pectinata*, *Lygodium volubile*, *Microgramma reptans*, *Mikania micrantha*, *Mimosa pigra*, *Phthirusa adunca*, *Scoparia dulcis*, *solanum stramonifolium*, *Stachytarpheta cayennensis*, *Sabicea aspera* (L.) Kuntze, *Struchium sparganophorum* L., *Syzygium cumini* and *Tabebuia insignis* (Latchman-White *et al.*, 1987; Reinders, 1993).

Plants used as tonics (Table 133, 134 & 135, Figure 57)

The Patamona Indians use 34 species in 25 families, representing 1.85% of the flora of the Region, to make tonics. These plants may be used singly or as a mixture consisting of several plants. The species used are: an unidentified Ascomycetes, *Ananas comosa*, *Annona muricata*, *Aspidosperma album*, *Astronium ulei*, *Cecropia angulata*,

Cecropia obtusa, *Chenopodium ambrosioides*, *Citrus aurantifolia*, *Cordia nodosa*,
Cymbopogon citratus, *Davilla kunthii*, *Dolicharpus spraguei*, *Doliocarpus macrocarpus*,
Doliocarpus savannarum, *Hymena courabil*, *Irlbachia alata*, *Jessenia bataua*,
Mormordica charantia, *Mouriri* cf. *huberi*, *Ocotea* sp., *Oenocarpus* sp. *Passiflora*
glandulosa, *Passiflora pedata*, *Pinzoa coriacea*, *Prionstemma* cf. *aspera*, *Psidium*
acutangulum, *Scoparia dulcis*, *Smilax lasseriana*, *Smilax latipes*, *Stigmaphyllon*
sinuatum, *Syzygium cuminis*, *Tripogandra serrulata* and *Zingiber officinale* .

Other Amerindian groups in Guyana make tonics using *Aframomum melegueta* (Roscoe) Schum., *Anacardium occidentale*, *Clusia grandiflora*, *Quassia amara*, *Smilax schomburgkii* and *Strychnos cogens* (Latchman-White *et al.*, 1987). The Ka'apor use *Bauhinia* sp., *Ceiba pentandra*, *Clarisa racemosa*, *Drypetes variabilis*, *Himatanthus sucuuba* (Spruce ex Muell. Arg.) Woods, *Jatropha curcas* and *Laetia procera* (Poepp. & Engl.) Eichl. as tonic plants (Balée, 1994).

Plants used as toothpaste

The Patamona Indians use *Apeiba echinata* as a toothpaste.

Toxic plants (Tables 136, 137 & 138)

In the Region 0.50% of the flora are considered as harmful plants. The species are *Amanoa* cf. *guianensis* Aubl., *Bombax flaviflorum*, *Clathotropis macrocarpa* Ducke, *Micandra glabra* (R.E. Shultes) R.E. Shultes, *Mucuna urens* (L.) DC., *Orthomene schomburgkii* (Miers.) B. & Kruk., *Pteridium aquilinum* L., *Sloanea* cf. *guianensis*

(Aubl.) Benth. and *Strychnos guianensis* (Aubl.) Mart..

Plants used to treat tuberculosis (Tables 139, 140 & 141, Figures 58 & 59)

The Patamona Indians use 9 species representing 0.50% of the flora of the Region to treat tuberculosis. The species are *Cyathea procera*, *Cymbopogon citratus*, *Dichorisandra hexandra*, *Hyptis pectinata*, *Lantana camara*, *Licania heteromorpha*, *Licania* sp., *Phoradendron crassifolius* and *Tripogandra serrulata*. The P-value obtained from regression analysis is 0.4137 which is not significant. The families Chrysobalanaceae and Commelinaceae show positive residuals in the regression analysis. Therefore species in these families are more likely to be used for treating tuberculosis.

A decoction of the inner bark of *Licania cuprea* is used to treat tuberculosis along coastal Guyana (Latchman-White *et al.*, 1987). The Warao use two preparations to treat tuberculosis. One is a decoction of leaves of *Pradosia surinamensis* (Eyma) Pennington (Sapotaceae), *Citrus limon* and *Symphonia globulifera* and the other a decoction of the blossoms and root of *Carica papaya* (Reinders, 1993).

Plants used to treat ulcers (Tables 142, 143 & 144, Figure 60)

The Patamona Indians use *Curatella americana*, *Pentaclethra macroloba*, *Protium sagotianum*, *Tetragastris altissima* and *Trattinickia burserifolia* to treat ulcers. This represents 1.45% of the medicinal species and 0.28% of the flora of the Region. The P-value obtained from regression analysis is 0.667 which is not significant. The family Burseraceae shows positive residual in the regression analysis. Therefore species in this

family are more likely to be used for treating ulcers.

A decoction of the *Momordica charantia*, *Pentaclethra macroloba*, and *Anacardium giganteum*, an infusion of the bark of *Anacardium occidentale* and *Clathrotropis brachypetala*, exudate from *Clusia fockeana*, latex from *Vismia angusta*, juice from macerated leaves of *Ricinus communis* and a poultice from *Cecropia* sp. are used to treat ulcers along coastal Guyana (Latchman-White *et al.*, 1987). At Kurupukari, a mixed Amerindian village, *Tapirira merchandii* Engl., *Mikania hookeriana* DC., *Jacaranda copaia*, *Eperua falcata* Aubl., *Licania alba* Cuatr., *Humiria balsamifera* Aubl., *Emmotum fagifolium* Desv. Ex Hamilton, *Norantea guianensis* Aubl. and *Genipa americana* are used to treat ulcers (Johnston & Colquhoun, 1996). In Brazil, the sap from *Croton palanostigma* Klotzs. is used to treat ulcers (Schultes & Raffauf, 1990).

Plants used to treat urinary bladder infections (Table 145)

The Patamona Indians use 3 species to treat urinary bladder infections. The species are *Canna indica*, *Chaptalis integerrima*, and *Drymaria* sp. A mixed village at Kurupukari use *Mora excelsa* (Johnston & Colquhoun, 1996). The Warao use a decoction of *Cecropia sciadophylla* Mart. (Reinders, 1993).

Plants used to treat vaginal bleeding not connected with menstruation

One species, *Bulbostylis paradoxa* (1 of 73) representing 1.37% of the species in the Cyperaceae family is used to treat bleeding. Along coastal Guyana, *Cordia curassavica* is used for the same purpose (Latchman-White *et al.*, 1987). The Warao use 8 species,

Brownea latifolia, *Centropogon cornutus*, *Cucurbita moschata*, *Desmodium adscendens*, *Euterpe oleraceae*, *Sabicea aspera*, *Sida rhombifolia* and *Zingiber officinale* to treat bleeding (Reinders, 1993). The Ka'apor use *Abuta grandifolia* and *Hymenaea parviflora* to treat excessive bleeding (Balée, 1994).

Plants used to treat venereal disease (Figure 61)

The Patamona Indians use 0.22% of the flora of the Region to treat venereal disease. The species used are *Alzatea verticillata*, *Canna indica*, *Crotalaria pilosa*, *Stachytarpheta cayennensis* and *Vismia macrophylla*. Mixed groups along the coast use *Anacardium giganteum*, *Solanum stramonifolium* and *Tabebuia insignis* to alleviate this infection (Latchman-White *et al.*, 1987).

Plants used to treat viral infections

The Patamona Indians use 3 species, *Banisteriopsis lucida* (Malpighiaceae), *Cymbopogon citratus* and *Panicum rudgei* (Poaceae) to treat viral infections. These species represent 0.88% of the medicinal species and 0.17% of the flora of the Region. In the Region 4.0% of the species in the Malpighiaceae and 2.0% of Poaceae family are used. Along coastal Guyana a leaf decoction of *Eugenia uniflora* and *Justicia pectoralis* is drunk as a treatment for viral infections (Latchman-White *et al.*, 1987).

Plants used to remove warts

Warts are removed by scrubbing it with the wood of *Licaria canella* ssp. *canella*.

Plants used to treat water boils

The Patamona Indians use a decoction of the aerial parts of *Curatella americana* (11.11% of the Dilleniaceae) to treat water boils on the skin.

Plants used to treat wheezing

The Patamona Indians use *Siparuna guianensis* to treat wheezing.

Plants used to treat whooping cough (Tables 146, 147 & 148, Figures 62 & 63)

Eight species in 6 families, representing 2.31% of the medicinal plants and 0.44 % of the flora of the Region is used to treat whooping cough. The species used are *Brosimum utile*, *Cyathea procera*, *Eryngium foetidum*, *Euterpe precatoria*, *Lantana camara*, *Oryctanthus florulentus*, *Phoradendron crassifolius* and *Phoradendron piperoides*.

Other Amerindian groups in Guyana use *Costus scaber*, *Hibiscus sabdarifera*, *Justicia pectoralis* Jacq., *Justicia secunda*, *Marcgravia coriacea* and *Siparuna guianensis* to treat whooping cough (Latchman-White *et al.*, 1987; Reinders, 1993).

Plant used to treat windpain

The Patamona Indians drink a decoction of the whole plant, *Pimpinella anisum* as a treatment for windpain. The Warao drink decoctions of *Petiveria alliacea* or *Ocimum campechianum* to treat windpain (Reinders, 1993).

Plants used to treat deep wounds (Figure 64)

Wounds are grouped into 2 categories, minor wounds (surface cut and bruises) and deep wounds. The Patamona Indians use 1.17% of the medicinal flora and 0.22% of the

flora of the Region to treat deep wounds. The species used are *Clusia grandiflora*, *Cyathula prostrata*, *Eschweilera* sp. and *Himatanthus bracteatus*. The Warao use *Mikania micrantha*, *Musa* sp. and *Physalis pubescens* L (Reinders, 1993) for the same purpose.

Plants used to treat yeast infections

The Patamona Indians use *Vismia macrophylla* (3.03% of Clusiaceae species) to treat yeast infections.

Chapter 7

Comparative ethnobotany of four 250 m² plots (Tables 149-156)

Four 250 m² plots at different locations in Region 8 were analyzed with regard to their plant utilization. Trees with a diameter at breast height (dbh) of 10 cm or more were tagged, sampled and information was gathered using the artifact - interview and inventory - interview methods. The information was placed in five use categories: medicinal, food, construction, fuel and others. As summarized in Appendix 2, 36 of 39 species were utilized at Kamana, 25 of 27 species were used at Kato, all 22 species tagged were used at Kopinang, and 19 of the 22 species were used at Waipa. Fifteen species at Kamana and Kato, 12 species at Kopinang and 7 species at Waipa have multiple uses. Burseraceae, Clusiaceae, Hippocrateaceae, Meliaceae, Moraceae and an unknown are the families at Kamana with the highest use-values; Anacardiaceae, Burseraceae, Chrysobalanaceae and Euphorbiaceae are the families at Kato; Anacardiaceae, Apocynaceae, Bombacaceae, Chrysobalanaceae, Lecythidaceae, and Moraceae at Kopinang; and Annonaceae, Burseraceae, Clusiaceae and Sapotaceae at Waipa.

One way to analyze the ethnobotany of an Amerindian group through a plot study is to see what percentage of the available species are put to different uses. Among the Patamona Indians, medicinal uses are found for a large percentage of plants.

At Kamana 51.28% of the species are used for medicinal purposes, at Kato 40.74% ,

at Kopinang 54.55% and 40.91% at Waipa. A lesser percentage can be used as food: 17.95% at Kamana, 11.11% at Kato, 13.64% at Kopinang and 31.82% at Waipa. At Kamana 28.21% of the species are used for construction purposes, at Kato 74.07%, 68.18% at Kopinang and 13.64% at Waipa.

The Patamona Indians use 30.77% of the species at Kamana, 33.33% at Kato, 13.64% at Kopinang and 36.36% at Waipa as fuel and 12.80% of the species at Kamana, 7.41% at Kato, 13.64% at Kopinang and Waipa are used for other purposes such as charms, for "evil-eye" cures and making tools.

Species used as medicinal plants include *Aspidosperma album* and *A. excelsum* (Apocynaceae) from which remedies to treat fungal infections including ringworm are obtained by macerating the inner bark and applying the extract directly to the affected area. A decoction of the inner bark is drunk to treat malarial infections and inflammation; the latex is mixed with water and used as an antiseptic agent and for treating sores. Extracts from the bark are also used to treat itching, eczema and eye infections. Other medicinal species includes *Protium sagotianum* and *Trattinickia burserifolia* of the Burseraceae. The bark of *Licania densiflora* (Chrysobalanaceae) is used to treat diarrhea and biliousness, the inner bark is used to treat chicken pox, measles and sores. The inner bark of *Moronobea coccinea* (Clusiaceae) is used as an antiseptic, for herbal baths and to treat chicken pox. *Tovomita calodictyos* (Clusiaceae) bark is used as an emollient agent and the fruit is used as an intoxicant, while *Tovomita schomburgkii*

bark is used as an aphrodisiac, to treat back pain and impotence. The inner bark of *Clathrotropis macrocarpa* (Fabaceae) is used to treat "bush yaws", the bark is used to treat athlete's foot and other fungal infections. The inner bark of *Trichilia pallida* (Meliaceae) is used to treat bacterial infections and sores. The latex of *Brosimum guianense* (Moraceae) is used to treat asthma, colds, toothache and the bark is used to treat sores. The immature fruits of *Eugenia* sp. (Myrtaceae) is used to treat diarrhea and dysentery. The inner bark of *Coussarea paniculata* (Rubiaceae) is used to treat "bush yaws", eczema and sores.

Discussion

One of the purposes of this thesis was to determine the usefulness of Moerman's (1979, 1991) statistical approach to ethnomedical analysis. Moerman was reacting to statements that dismissed indigenous medicine as being without pharmacological merit, an attitude which had already begun to be refuted by clinical trials of botanical medicines (Moerman, 1979). Moerman realized that there was also another way to test the hypothesis that American Indians chose medicinal plants for their pharmacological value, a statistical method. The null hypothesis would be that American Indian plant medicine depended solely on the placebo effect, and plants were chosen for their symbolic meaning. He reasoned that, "were Native American medicine 'all placebo', then the medications used (primarily botanicals) would be used because of their 'meanings' or their 'symbolic values'. Since the essential character of meaning is the arbitrariness of symbol, it seems reasonable to assert that, insofar as native American medicine is 'symbolic', the plants used medicinally will be a random representation of plants in nature" (Moerman, 1979). Moerman's regression analysis of native American medicinal plants against regional plants showed "families that are used much more, or much less, than availability would predict," confirming for him that American Indian plant medicines are not chosen randomly, but for their phytochemical qualities.

Moerman noted that "It would be a straightforward matter to compare the patterns of use in North America with those elsewhere" (Moerman, 1991). This is true up to a point.

Family-by-family comparisons between the North American Indian plant pharmacopoeia and that of the Patamona are possible in this study, as residuals and other values can be directly compared. However, the differences between North American and South American flora mean that such comparisons are not always fruitful. For example, Moerman points to the Corylaceae and the Urticaceae as two families that were extensively used by North American Indians for medicinal purposes. The Corylaceae are not found in Guyana, and the Urticaceae, while present in the country, are not used medicinally by the Patamona.

Moerman's method would be most useful in fostering family-by-family comparisons between the plant pharmacopoeias of Amerindian tribes within the same region. For example, it would be interesting if the medicinal plants of each of the nine tribes of Guyana were analyzed by this method.

If ethnobotanists in Guyana or other areas did choose to incorporate Moerman's linear regression analysis into their research, it would be better if they adopted the use categories of their research subjects ("medicament for bush yaws", and so on) rather than Moerman's clusters of uses. A grouping such as "Dermatology" (Moerman, 1991) does not tell us enough about the specific uses to which plants are put. This study shows that the Patamona distinguish between the need to treat sores, to treat persistent sores (or life sores) and to treat bush yaws, a particular type of persistent sore. Thus we learn something about a threat that the Patamona perceive to their health, which indicates that

their environment has complex bacterial, or parasitic, or toxic plant dangers.

When ethnobotanists make careful note of each plant use, and publish each different use, however cumbersome the data may be, irreplaceable information is preserved for the future. Thus should the tribal groups lose their traditional culture, their knowledge will not be lost. (It might even conceivably be brought back into practice by their own descendants using published papers as a reference). For example, Johnston and Colquhoun (1996), found that 246 different plant uses are reported by the residents of the Kurupukari village. That sort of information should be recorded in all its idiosyncratic detail, as otherwise it may be lost.

On the subject of plant uses, I feel that medicinal plants should not be rated as to their importance so as to arrive at a quantitative value, as doing so might introduce an unfortunate subjectivity that, ironically, quantitative studies are meant to avoid. Prance *et al.* (1987) arrived at "familial use values" by first assigning a use value to each species they collected. They rated some plants as having a "major use," like a major food item, and some as having a "minor use," such as fruits collected and eaten only by children. They extend this rating scheme (1.0 for a major use and 0.5 for a minor use) to other plant categories such as medicinal plants. While I did try to use the method of Prance *et al.* (1987) for purposes of comparison (see below), I preferred to rate each medicinal plant by counting how many different medicinal uses it had.

Rating the importance of medicinal plants raises difficult questions. Consider the

many plants that are used by the Patamona to treat coughing. That the Patamona recognize and remember so many indicates that they regard coughing as an important problem. On the other hand, only two plants are reported to stop hemorrhaging in a woman who has just given birth (*Bulbostylis paradoxa*, Cyperaceae, and *Byrsonima verbascifolia*, Malpighiaceae). That only two plants are so used may mean that the Patamona feel this is a rare problem, and they are therefore less conscious of it than they are of coughing, or it may mean that the phytochemicals that can stop hemorrhaging are not well represented in the local flora, whereas those that stop coughing are, or both may be true, or something else may be operating. At any rate, we cannot decide which of these plant uses are more important.

Certainly one of the services that ethnobotanical studies can provide is a plot study, which can show among other things what percentage of a tribal group's local flora, is used by that group. Information of this sort can be directly used in setting conservation policy (Boom, 1985a). Logging concessions must not be allowed to rob a group of a part of its culture, as might happen if a village was unable to gather a particular medicinal tree because it is present at low density and surrounding land had been logged. Here, the plot study shows that the Patamona use, on average, 93% of the plants on their land. At Kamana, 92% of the plants were reported as being useful, at Kato, 93%, at Kopinang, 100% of the plant species in the study plot were identified as having a use, and at Waipa the figure was 86%. On average, the best-represented use category was medicinal plants,

with an average of 47% of plants used medicinally. Almost the same value was obtained for construction use, though. An average of 46% of plants was used for construction. Plants used for construction are shown in tables 149, 150, 151 and 152.

Boom (1987) found that 30% of the plants used by the Panare residents in one Venezuelan village was useful. Five percent of these were medicinal plants. The largest use category he found was food plants, which accounted for 17% of the useful plants (Boom, 1987). The Chácobo of Bolivia used 82% of the tree species available to them in a plot study (Boom, 1985a). At Kurupukari in central Guyana, Johnston & Colquhoun (1996) counted useful plants, and found that most useful plants, 39%, were medicinal plants. In this village medicinal plants sometimes had multiple medicinal uses. One species had five medicinal uses, and two species had four medicinal uses (Johnston & Colquhoun, 1996). The Patamona also report multiple uses for some plants. The Patamona had two plants with four medicinal uses and twelve plants with three medicinal uses in the plot study.

An interesting fact that emerged from this study is that the Patamona make widespread use of monocots for medicinal use, as well as dicots. In his study of the Panare Indians of Venezuela, Boom cites ten families used medicinally, all of which are dicots. He does suggest however that the pharmacopoeia of his study site was impoverished because in that village the Panare had lost their shamans (Boom, 1987). Monocots as medicinal plants are reported for the Chácobo Indians of Bolivia. There,

Boom (1986) found five species of the Arecaceae (palms) in use medicinally. Prance *et al.* (1987) studied forest trees used by four Amerindian groups in the Amazon. They present a total of 221 useful tree species, of which 66 had medicinal uses. Of these, only four were monocots, all Arecaceae. Moerman draws attention to one monocot family, the Poaceae (grasses). He notes that the Poaceae are rarely used medicinally, and have a residual value of -128.9 (Moerman, 1991). In contrast, this study shows that the Patamona use sixteen families of monocots, comprising numerous species, for medicinal purposes. This indicates that further studies of South American medicinal monocots should be made, to modify or readjust the assertions of Gottlieb (1985) that very few monocot families need be scrutinized for medicinal activity. The monocot families and their medicinal uses are shown below. Where a monocot family had a positive residual for a particular medicinal use, that use is highlighted.

Agavaceae:

Fish poison, shampoo, and soap.

Amaryllidaceae:

Anti-arthritic, anti-diarrheal, anti-helminthic, **anti-irritant**, emollient, hair growth, abscesses, mumps.

Araceae:

Anti-pruritic, **emollient**, **bush yaws**, skin conditions, wounds.

Arecaceae:

Anti-malarial, analgesic, anti-pruritic, **anti-pyretic**, anti-septic, **herbal bath**,
chicken pox, influenza, measles, whooping cough, **tonic**.

Bromeliaceae:

Abortifacient, **tonic**.

Cannaceae:

Anti-dermatosis, anti-infective, anti-pruritic, bush yaws, cleansing the bladder,
eczema, sores and venereal disease.

Commelinaceae:

Anti-asthmatic, charm, emetic, medicament for colds, **tuberculosis**, **tonic**.

Costaceae:

Analgesic, anti-asthmatic, **anti-bacterial**, **anti-infective**, anti-pyretic, **colds**,
coughing, ear infections.

Cyperaceae:

Anti-bacterial, anti-diarrheal, **anti-infective**, anti-inflammatory, anti-malarial, **anti-menorrhagic**, anti-pyretic, **anti-septic**, anti-venom, charm, bleeding, bush yaws,
burns, cuts and wounds, migraines, medicament to stop hemorrhaging after childbirth.

Heliconiaceae:

Analgesic, anti-histamine.

Iridaceae:

Anti-arthritic, muscular aches and pains, sprains.

Musaceae:

Anti-septic, medicament for thrush.

Poaceae:

Anti-asthmatic, **anti-bacterial**, anti-conjunctivitis, anti-fungal, **anti-infective**,
anti-inflammatory, anti-microbial, **anti-pyretic**, anti-viral, bronchitis, **colds**,
coughing, **influenza**, sore throats, tuberculosis, shampoo, tonic.

Smilacaceae:

Analgesic, backpain, **tonic**.

Zingiberaceae:

Anti-fungal, anti-herpetic, anti-malarial, anti-pruritic, anti-pyretic, eczema, colds,
coughing, migraine, sores, vitiligo, tonic.

I was also interested in how often cryptogams and fungi are used as medicinal plants.

Boom (1985) found what he considered to be a "high degree of fern utilization" among the Chácobo of Bolivia. The Chácobo have 25 fern species in their area, and use 68%, 17 fern species, for seven medicinal uses (Boom, 1985). There are 97 fern species in the Patamona region, and the Patamona use 6.19%, 6 fern species, medicinally. Below are the uses to which the Patamona put Pteridophyta, as well as Lycopodiums and Fungi, with positive residuals highlighted as before.

Pteridophyta:

Analgesic, anti-asthmatic, anti-infective, anti-malarial, anti-menorrhagic, **anti-pruritic**, anti-pyretic, anti-tuberculosis, anti-septic, **emetic**, **emollient**, herbal bath, bush yaws, chicken pox, cold sweat, cuts and wounds, eczema, measles, sores, whooping cough, poison.

Lycopodiaceae:

Charm, emetic, purgative.

Ascomycetes:

Tonic

Chapter 8

Conservation Issues that may impact Patamona Indians and Recommendations

In Guyana today, virtually all politicians speak of their concern for Amerindian rights. However, because of a peculiar situation in which the use areas of Amerindian settlements are not legally set aside, Amerindian lands are vulnerable to outside exploitation from miners or loggers. It is therefore important to understand what the effects of logging and mining are on forests. The lessons learned by conservation biologists in heavily exploited areas of South America such as Brazil may be important for the future of the Patamona Indians and other Guyanese Amerindians.

Relevance of Conservation Biology to the Patamona

Each Amerindian village has an area around it that is understood to be its concession. Hunting, shifting agriculture and the gathering of forest products for food, medicine, and construction take place in these areas. It is an unwritten law that this area is for the Amerindians' own use, and the concession areas are designated in a very approximate way: from this river to that river, from this mountain to that mountain. No documentation exists to delineate concession areas or to state the Amerindians' rights over them.

While an unwritten principle exists that no mining or logging should be done by outsiders on the Amerindians' land, the Department of Geology and Mines and the Forestry Department do issue permits to mine or log in the use areas of various tribes.

Sometimes they do so in ignorance of the nearby presence of an Amerindian village. In other cases, the department is aware of the Amerindian presence, but the mining concern or logger promises to re-locate Amerindians. To my knowledge this has not yet happened to any Patamona Indian settlement, but no controls are in place to prevent it.

Mining

The effects of mining are of particular concern, because of the possibility of disease and genetic damage following in the wake of mercury and cyanide pollution. While I know of no instance where disease or deformity has been conclusively linked to mining-generated pollution, such effects are known from pollution cases in other countries (such as the famous Minimata tragedy in Japan, caused by mercury). The Guyanese should protect Amerindian lands from mining pollution on a precautionary basis.

Mercury is used when gold-bearing sediments are being mined from the bed of a river. Its purpose is to amalgamate gold flecks by forming an gold-mercury complex. Mechanical dredges suck up bottom sediments, which are then passed through a series of sieves to concentrate like particle sizes. Mercury is added to the sieves on board the dredge, which sits on pontoons in the river. Two kilograms of mercury are required to amalgamate 1 kg of gold (Martinelli *et al.*, 1988). During the process of amalgamation on board the dredge, a minimum of 1.32 kg of mercury is released to the environment for every kg gold produced (Malm *et al.*, 1990). The next step in this process is to burn the

amalgamate in the open air and recover the gold. About 20% of the mercury in the burning amalgamate is released to the atmosphere (Malm *et al.*, 1990).

In a study of the Madeira River and its tributaries in Brazil, Malm *et al.* (1990) found that 20% of mercury concentrations in river sediments (both suspended and on the bottom) and riverbank soils exceeded normal background concentrations of 0.19 ug / g for sediments, and 0.1 ug / g for soil. In one riverbank area where it appeared that mining dredges had been hauled up for cleaning and repair, soil concentrations were 1000 times background level.

One threat to Amerindian health posed by pollution of rivers through mining is contamination of edible fish species by mercury. The World Health Organization safety limit for mercury in fish is 0.5 ug / g ww (Martinelli *et al.*, 1988). In a survey of local fish species in the Madeira and its tributaries, Malm *et al.* (1990) found that carnivorous fish were more highly contaminated than herbivorous fish, because mercury concentrates at higher trophic levels.

Specimens of the carnivorous Dourada (*Brachyplatistoma* sp.) had mercury levels of 2.10 ug / g ww close to the mining areas. Another carnivorous fish, the Filhote (also *Brachyplatistoma* sp.) carried a 0.50 ug / g ww mercury load near the mining area, a borderline medically acceptable level. However other Filhote specimens caught 180 km downstream from the gold-mining area carried a 1.47 ug / g ww mercury load (Malm *et al.*, 1990), indicating that the movement of mercury through the food chain is neither

simple nor confined to local areas. In this study samples were analyzed only from rivers that locals were actively fishing. Locals refrained from fishing the most heavily contaminated river. Metallic Hg is deposited in water either directly from dredges or as airborne particulate. It does not become available to fish or humans until it is converted into monomethylmercury, $\text{Hg}(\text{CH}_3)$, the form in which mercury concentrates in tissues. Monomethylmercury is formed by bacterial action on contaminated sediments, especially at low pH (Malm *et al.*, 1990). Black- and brown-water rivers have high bacterial action and are acidic. Enhanced biotransformation in these waters may favor mercury uptake by fish even at considerable remove from the pollution source. The four rivers that pass through the use areas of the villages in my study are all black-water rivers.

Mercury poisoning of humans can be measured by analyzing human hair.

Background levels in Brazilians who never eat fish and live far from mining areas range are 0.74 ug / g dw. Regular fish consumers far from mining areas ranged from 1.5 -13 ug / g dw in hair. In the mining area, mercury concentrations in hair ranged from 0.22-40 ug / g dw. Unfortunately, it is very difficult to gauge whether locals are getting sick from these mercury levels, as the symptoms of Hg poisoning and malaria are very similar (Malm *et al.*, 1990).

Cyanide pollution is also associated with mining of gold (Colchester, 1995).

Cyanide pollution became news world-wide in 1995 when 130 million gallons of

cyanide were accidentally released from a mining operation's waste pond into Guyana's Essequibo River (Herman, 1996). The Essequibo, one of Guyana's largest rivers, is known for its island-dotted beauty, and is important for drinking water and fishing. Arsenic and copper were also present in the wastewater. Then-president Cheddi Jagan declared the area of the spill an "environmental disaster zone" (Colchester, 1995), and Guyana's ambassador to the United States reported that "all aquatic life is dead" near the mine (Herman, 1996). Mining has effects on local people beyond heavy-metal pollution. Canon John Dorman wrote to the Commissioner of Geology and Mines on behalf of the Mazaruni Christian Council to complain about the effects on local Amerindians of gold mining in the Upper Mazaruni River. The canon pointed out that in this area waterways are the public highways. Dredging had discharged great quantities of silt, logs, and branches into the water, making stretches of the river hazardous at night or at the low-water season, and threatening fish breeding areas. There has also been a marked increase in mosquito presence in the affected areas of the river.

An unexpected consequence of the arrival of a mining concern in the area had been its disastrous economic effect on the Amerindians. The mine offered locals wages of over \$2000/day, as against the going wage of \$65/day. At once, prices for food staples in local shops skyrocketed, affecting all local residents, whether employed by the mine or not. Once-independent Amerindian farming families have been forced into debt even when the head of household was earning mine wages, and the family is consuming no

more than the food staples it normally bought. The canon refers to the "economic irresponsibility" of mine wage scales, noting that the "apparent affluence of such wages is illusory" (letter, Dorman, 1989).

Two serious effects of mining are destruction of riverine forest and alteration of river topography. I personally observed these processes in 1991, along a stretch of the Potaro River where Amerindian villages of Patamona Indians composition are located.

Missile dredges operate by cutting away riverbank soil, using underwater divers operating the so-called missile, attached to the floating dredge by a tube up which soil is carried. To cut away the soil safely, it must be cleared of forest. The whine of power saws and the crashing of trees may be heard throughout the day in the vicinity of mining operations. Timber that cannot be used is burned, adding to carbon emissions and creating a steadily expanding slash-and-burn scar. The downing of these riverine forests is a loss to the Amerindians who had been utilizing them, to potential ecotourists, and to botanists and other scientists. The Region is very rich and diverse in its wildlife population (Appendix 9).

As the missile dredges chew up the soil, the riverbank becomes very high and steep, forcing local residents to climb a precipitous track whenever they go to or from the river, their chief avenue of transportation. The soil that has been worked through the dredge is returned to the river stripped of organic matter. It accumulates as white sandbars and dunes, on which no useful plants grow. Eventually, the course of the river may be

altered. No research has been done in Guyana to ascertain the actual effects on Amerindian communities of nearby mining operations.

Logging

As indicated above, it is possible for outsiders to log as well as mine in Amerindian use-areas, which often have escaped such exploitation only because they are remote. In Guyana logging is often selective, with Amerindians hired to remove specific tree species. Strips of forest are cleared to create a network of roads. However, clear-cutting is also known in Guyana. Road clearing and clear-cutting creates areas of edge and fragmented forests.

There is currently no political will in Guyana to follow Costa Rica's example of setting aside a large percentage of land so as to make ecotourism a major source of income. In a recent radio interview the Prime Minister of Guyana, Janet Jagan, spoke of plans to open the interior to forest and other development. She added, "we have no intention of being a museum for the world to look at" (Interview, WLIB, November 1997).

As of 1977, the worldwide rate of clearing of tropical forest was 150,000 km per year (Ferreira & Laurance, 1997). This has led to many studies of the collateral effects of forest clearing, such as those by Chamber & Higuchi, (1998); Laurance *et al.* (1997); Laurance and Bierregaard (1997); Lovejoy *et al.* (1986) and Williams (1997), who treated Brazilian forest fragmentation as a large-scale laboratory. This research is

relevant to Amerindians in Guyana, who may be subjected to similar processes at any time.

Near fragment edges, increased numbers of dead trees are seen. Dead trees that remain standing were usually killed by differences in microclimate, such as humidity, water availability, and greater variations in temperature. Fallen dead trees are generally due to increased winds at forest edges. These effects are not concentrated in a narrow strip near the edge. Changes in climate can be felt up to 60 m inward from a forest edge, and increased winds can be a factor more than 200 m inward (Ferreira & Laurance, 1997). In irregularly shaped forest fragments (more commonly encountered than square or circular fragments) 22-42% of a 1000 ha fragment would be edge-affected. An irregular fragment of 500 ha would be 30-58% edge-affected (Ferreira & Laurance, 1997).

In a test of edge effect on tree mortality, in which 632 trees of the family Myrtaceae were followed for six years after clear-cutting had isolated them within fragments of one, ten, or 100 hectares, Ferreira & Laurance (1997) found that while size of fragment alone had little effect on the trees, their distance to the fragment edge significantly increased tree death and damage. Within 100 m of a fragment edge trees were about seven times more likely to die or be damaged. Over time, forest composition in a fragment will shift towards disturbance-adapted plants.

Using their observation that tree damage and death are greater within 100 m of an

edge, the authors constructed a core-area model to assess the extent to which trees will be affected by being isolated in irregularly shaped fragments of varying sizes. Predictably, the model showed that as size of fragment decreases, edge effects increase. However, size and edge effects are not coupled in a linear manner. The rate of tree death and damage becomes more pronounced as fragment size falls below 500 ha. Fragments of 500 ha and less are likely to lose their original forest character (Ferreira & Laurance, 1997).

For the Patamona, a forest fragment that is characterized by disturbance-adapted species will likely be without many of the plants traditionally used for medicines. Amerindians formed their pharmacopoeias when they had access to vast tracts of old-growth forest, and continue to need such forest if they are to preserve their botanical culture.

Forest fragments also gradually lose many of their animal species after they are isolated by logging (Lovejoy *et al.*, 1986). In this they function like islands which, as we know from island biogeography theory, support fewer species than mainland's (MacArthur & Wilson, 1967). Species that are reluctant to cross the wasteland caused by clear-cutting become isolated in the fragments, with fewer or no opportunities to replace themselves by breeding. While it is outside the scope of this study to record the interactions between the Patamona Indians and the birds, mammals and other animals that share their region, these non-plant species should also be regarded as important

elements of Patamona Indians lands. I have listed the birds and mammals known to be present in Region 8 (Appendix 10).

Logging is a possibility for the Patamona Indian areas, because mining companies have pushed roads into this formerly very remote region, and loggers often follow the appearance of new roads. An often-proposed solution for tropical forest conservation is to make existing old-growth forests economically self-sustaining by exploiting the market for non-timber products produced within them, such as Brazil nuts or rubber. Ideally, the resources being exploited should come from trees that need old-growth habitat, and should bring a reasonably high market price. Thus, the trees would not be cut, or their valuable product would be lost, and the surrounding forest would not be cut or climate changes and pollinator losses would cause the trees to stop producing.

This concept is not easily applicable to Patamona Indians use areas. At present, the Patamona's major export consists of woven implements such as matapee, a tubular sieve for draining toxic liquid during the making of cassava bread; warashi, a backpack; and utilitarian baskets, hats; and tablemats made from *Ischnosiphon*, a member of the Marantaceae. *Ischnosiphon* can grow well along forest edges beside disturbed areas, so it is not a plant that encourages conservation of old-growth forest. Furthermore, articles made from *Ischnosiphon* are not particularly expensive within Guyana, and are unlikely to sell well abroad.

An ideal plant for this approach to forest management is *Bertholletia*, the source of

Brazil nuts, because they require the surrounding forest for pollinators, there is an established market in the West for the nuts, and they can bring important revenue. Yet surprisingly, a study to determine the effectiveness of marketing products such as Brazil nuts in keeping lands safe from deforestation for cattle ranching found the cattle winning, and Brazil nut stands dying (Bunker, 1982). The study sought to address the proposition, "Agricultural rural communities with well established ties to national and international markets, especially those with mixed economies partially dependent on forest products, may be better prepared to resist the ecosystemic and economic disruption of large-scale pasture formation" (Bunker, 1982). The study was conducted in an area where success seemed most likely: the Medio Amazonas region of Para, where rural productivity, dense settlement, a long history of trade, including international trade, and "a local commercial elite" dependent on this trade, made it "the likeliest case for resistance to deforestation" (Bunker, 1982).

Unfortunately the peasants, who depended on the stands of Brazil nut trees and on other plants (such as rubber trees, oil palm, and jute), usually, did not have title to the land they used. Both ranchers and peasants benefited by close proximity to the local town, and therefore competed for land. The government encouraged cattle pasture formation by providing credit, however on the terra-firme only Brazilnut stands carried land titles that could be used to secure such bank credit. Laws prevented Brazilnut trees from being felled, but after the tree stands were isolated in pastures, they lost their

pollinators, and slowly died from heat. This process "eliminated one of the more flexible and ecologically balanced terra-firme peasant economies" (Bunker, 1982).

This sad history teaches that for local people to maintain extraction economies there must be considerable well-planned government support. Although the concept of selling non-timber products has caught the Western imagination as a solution to rainforest destruction, it does not seem practical for the Patamona.

Another popular idea to counter threats of deforestation is to preserve forests by sustainably harvesting a few of the timber species that grow there. The latter approach, forest management, was studied with regard to mahogany (*Swietenia macrophylla* King) in Bolivia (Rice *et al.*, 1997) at the Chimanes Permanent Timber Production Forest, a half-million-hectare site set aside as a model for sustainable management.

The authors began with high hopes that this tract would fulfill its promise, but came to the realization that for some species (such as mahogany, the seedlings of which do not grow in shade) clearing and replanting tracts would be environmentally destructive and prohibitively expensive. However, selective removal of a few targeted tree species by a logging company without replanting (the method of logging I have most often seen in Guyana) while not sustainable, may cause only minor environmental damage. Ironically, well-meaning conservation initiatives can result in greater forest damage. "Some advocates of sustainable management contend that boosting market demand for lesser-known species will make it worthwhile to maintain a production forest that otherwise

might be converted to farmland or rangeland" (Rice *et al.*, 1997). However as the authors demonstrate there is little economic incentive to replant rather than to simply harvest and move on, and market demand for a wider variety of trees would probably just mean that more trees are taken during a logging operation, with the final damage to the forest being greater.

For example, the Patamona Indians harvest the leopard wood tree, *Piratinera guianensis*, (Moraceae) from which they make bow shafts for their own use. *Brosimum guianensis* (Aubl.) Huber is also called leopard wood (Boggan *et al.*, (1997). The tree's beautifully patterned heartwood, which polishes to a high gloss, could be marketed to the wider world as desktop items and jewelry. That would not be likely to leave the Patamona Indians or the old-growth forests they use better off, though. At present the Patamona Indians harvest of leopard wood has been sustainable because of the relatively low numbers of Patamona, who took only as many trees as they needed, allowing natural processes to regenerate the species. Greater demand for leopardwood would result in a faster, and unsustainable, harvest. It would also bring outside logging interests into high-elevation areas (where Leopardwood grows and where the Patamona Indians reside) where they would take any other saleable trees as well, leaving a compromised forest.

Another current idea to promote sustainable tropical forestry is timber certification. Such "green labeling" is not practical for species that require a large capital outlay to grow sustainably, like mahogany, for which unsustainable harvesting is up to five times

grow sustainably, like mahogany, for which unsustainable harvesting is up to five times more profitable than sustainable harvesting with regrowing. Consumers will buy green-labeled tropical wood only if it is no more than ten percent more expensive than uncertified wood (Rice *et al.*, 1997). Therefore timber certification will work only when the changes made to lessen environmental damage are inexpensive. If Forestry sells a logging permit in a Patamona Indians use area, green labeling might be an option if Forestry and the logging company agree to the following terms: restrict the number of species of trees the loggers can remove, so as to leave the forest minimally disturbed, mandate the minimum diameter at breast height of removed trees, and give the Patamona Indians title to the land once it has been logged.

An approach such as this, which allows for the possibility of logging and seeks to mitigate rather than prevent it, may be the most practical approach given current political realities. I would prefer that the Patamona Indians be given title to their land as it now stands, unlogged (and I recommend this below), but this does not appear imminent. Ariel Lugo has written of a paradigm shift in thinking about the rainforest (1995). In the old view the rainforest was seen as an ancient and fragile ecosystem that had not been subject to disturbance. Now, rainforests are seen to have been subject to many generations of modification and management by local indigenous peoples. Lugo concludes, "We must preserve conditions that lead to forest growth and guard against their loss. As long as forest growth conditions prevail, there will be diverse forests. However, the forests of

tomorrow may be of different species composition than those of today, just as today's forests are of different species composition than those of yesterday" (Lugo, 1995). The important question will be whether future species compositions include the medicinal plants that are part of indigenous peoples' culture and that the West needs to study and use.

Below are recommendations for ensuring a future for the Patamona Indians.

1. The government of Guyana should move immediately to lay out the precise locations and dimensions of the use areas of Amerindian villages. This would not require extensive research; more than sufficient information on Guyana's Amerindians has already been gathered by the Amerindian Research Unit at the University of Guyana.
2. These use areas should be protected by written laws carrying penalties, not by unwritten principles violated at will.
3. Buffer zones should be delineated to surround the Amerindian concessions. Selective logging may be allowed in these zones, but not clear-cutting or mining.
4. The government should set up an office on environmental damage. This group would survey sites for environmental degradation, keep records of such information, and issue permits to outside researchers wishing to study effects of mining or logging.
5. The University of Guyana should set up a program whereby it becomes easy for members of research institutions to document Guyana's flora and fauna with the assistance of the local Amerindian communities. Currently exists such a program but

it is not well managed.

6. A system of trails should be laid out so that Guyana can become a living "museum of the world". This would be a significant boost for ecotourism.
7. When these trails are in place and tourists are regularly visiting, Amerindians will be able to sell their craft items at regular trading posts.
8. The government, research institutions such as the Guyana Pharmaceutical Corporation, the University of Guyana, the Institute of Applied Science and Technology, and the Amerindian communities within the Region, should enter into agreement with outside research institutions such the National Cancer Institution, National Institute of Health and even various pharmaceutical industries to sustainably harvest the natural products of the forest. A monetary return should be adequately negotiated especially to benefit the Amerindian community involved and individual property rights should be negotiated to an amicable solution.
9. Large scale mining operations, especially those involving suction dredging should halt immediately and the mining companies should partake in a reforestation program in those areas where the damage is extensive.
10. Only Amerindians should be allowed to mine (on a small scale) their concessions, with the approval of the Council of that village.
11. The Government should act without delay, to establish the entire Region as National Park to International Standards. This will encourage tourists, scientists and other

international support for infrastructure and management, and will create jobs for the people in the Region as well as other benefits.

12. Not for Profit Organizations, local and international should lobby the Government of Guyana to save the forest from its current path of destruction with actions such as debt for nature swap and buying large tracts of pristine forest for research scientist to study at a nominal fee. All such monies obtained should be used for managing the forest.

Appendix 1

Tables: number, percent, and regression analysis of Patamona medicinal plants

Table 1: Number and percent species used as abortifacient plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Bromeliaceae	16	1	36	1	2.78
Loranthaceae	7	1	12	1	8.5
Rutaceae	4	1	5	1	20

Table 2: Number and percent taxa in families used to treat abscesses.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Euphorbiaceae	25	1	41	1	2.44

Table 3: Number and percent taxa in families used as analgesic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	1	22	1	4.55
Apiaceae	2	1	2	1	50
Apocynaceae	16	1	32	1	3.1
Arecaceae	13	1	27	1	3.7
Asteraceae	27	1	51	1	1.96
Burseraceae	5	1	9	1	11.1
Caesalpinaceae	18	1	56	1	1.79
Clusiaceae	9	2	33	2	6.06
Costaceae	1	1	5	1	20
Heliconiaceae	1	1	7	1	14.29
Loranthaceae	7	1	12	1	8.33
Malvaceae	4	1	5	1	20
Malpighiaceae	7	1	25	1	4
Meliaceae	3	1	7	1	14.29
Mimosaceae	9	1	37	1	2.7
Moraceae	4	1	8	2	25
Myristicaceae	1	1	1	1	100
Piperaceae	3	1	22	2	9.09
Fern Families	38	1	97	1	1.03
Sapotaceae	8	1	13	1	7.69
Smilacaceae	1	1	4	1	25
Solanaceae	9	1	25	1	4
Verbenaceae	9	1	12	1	8.33

Table 4: Regression analysis and Parameter Estimates of analgesic plants.

P = 0.9163; not significant; Rsquare = 0.000538; N = 23.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.1384369	0.105172	10.82	.00000
No. of species in family	-0.000359	0.003374	-0.11	0.9163

Table 5: Predicted and residual number of species used as analgesic plants.

Taxa in the Clusiaceae, Moraceae and Piperaceae with positive residuals are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Annonaceae	1.130544	-0.13054
Apiaceae	1.137719	-0.13772
Apocynaceae	1.126956	-0.12696
Arecaceae	1.12875	-0.12875
Asteraceae	1.12014	-0.12014
Burseraceae	1.135208	-0.13521
Caesalpinaceae	1.118346	-0.11835
Clusiaceae	1.126598	0.873402
Costaceae	1.136643	-0.13664
Heliconiaceae	1.135926	-0.13593
Loranthaceae	1.134132	-0.13413
Malvaceae	1.136643	-0.13664
Malpighiaceae	1.129468	-0.12947
Meliaceae	1.135926	-0.13593
Mimosaceae	1.125162	-0.12516
Moraceae	1.135567	0.864433
Myristicaceae	1.137719	-0.13772
Piperaceae	1.130544	0.869456
Fern Families	1.103636	-0.10364
Sapotaceae	1.133773	-0.13377
Smilacaceae	1.137002	-0.13700
Solanaceae	1.129468	-0.12947
Verbenaceae	1.134132	-0.1341

Table 6: Number and percent taxa in families used as anti-arthritic plants

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Burseraceae	5	1	8	1	12.5
Iridaceae	3	1	3	1	33.33
Mimosaceae	9	1	37	1	2.7
Piperaceae	3	1	22	3	13.64
Portulacaceae	1	1	1	1	100
Rutaceae	4	1	5	1	20

Table 7: Predicted and residual number of species used as anti-arthritic plants. Species of the Piperaceae with positive residuals, are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Amaryllidaceae	1.153888	-0.15389
Burseraceae	1.21407	-0.21407
Iridaceae	1.113768	-0.11377
Mimosaceae	1.795823	-0.79582
Piperaceae	1.494916	1.505084
Portulacaceae	1.073647	-0.07365
Rutaceae	1.153888	-0.15389

Table 8: Number and percent taxa in families used as antibacterial plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	8	1	13	1	7.69
Costaceae	1	1	5	3	60
Crassulaceae	1	1	1	1	100
Cyperaceae	19	1	73	1	1.37
Gentianaceae	8	1	14	1	7.14
Lamiaceae	4	1	8	1	12.5
Malvaceae	4	1	5	1	20
Malpighiaceae	7	2	25	3	12
Melastomataceae	28	1	111	1	0.9
Meliaceae	3	1	7	1	14.29
Moraceae	4	1	8	1	12.5
Poaceae	38	2	100	2	2
Scrophulariaceae	6	1	6	1	16.67
Solanaceae	9	1	25	1	4
Verbenaceae	9	1	12	1	8.33

Table 9: Regression analysis and Parameter estimates of antibacterial plants.
 $P = 0.5953$, not significant; $R_{\text{square}} = 0.022295$; $N = 15$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.1991687	0.200259	5.99	0.0000
No. of species in family	0.0024515	0.004503	0.54	0.5953

Table 10: Predicted and residual number of species used as antibacterial plants.
Taxa of Costaceae, Malpighiaceae and Poaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.231038	-0.23104
Costaceae	1.211426	0.788574
Crassulaceae	1.20162	-0.20162
Cyperaceae	1.378128	-0.37813
Gentianaceae	1.23349	-0.23349
Lamiaceae	1.218781	-0.21878
Malvaceae	1.211426	-0.21143
Malpighiaceae	1.260456	1.739544
Melastomataceae	1.471285	-0.47129
Meliaceae	1.216329	-0.21633
Moraceae	1.218781	-0.21878
Poaceae	1.444319	0.555681
Scrophulariaceae	1.213878	-0.21388
Solanaceae	1.260456	-0.26046
Verbenaceae	1.228587	-0.22859

Table 11: Number and percent taxa in families used as anti-diabetic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	1	22	1	4.55
Cucurbitaceae	4	1	8	1	12.5

Table 12: Number and percent species used as anti-diarrheal plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	2	28.57
Aristolochiaceae	1	1	1	1	100
Asteraceae	27	1	51	1	1.96
Burseraceae	5	3	9	3	33.33
Caesalpiniaceae	18	3	56	6	10.71
Caricaceae	1	1	1	1	100
Chenopodiaceae	1	1	1	1	100
Chrysobalanaceae	4	1	21	1	4.76
Clusiaceae	9	3	33	7	21.21
Cucurbitaceae	4	1	8	1	12.5
Cyperaceae	19	3	73	3	4.11
Euphorbiaceae	25	1	41	1	2.44
Fabaceae	26	1	43	1	2.33
Hippocrateaceae	5	1	7	1	14.29
Malpighiaceae	7	1	25	5	20
Meliaceae	3	1	7	1	14.29
Mimosaceae	9	1	37	1	2.7
Moraceae	4	1	8	1	12.5
Myristicaceae	1	1	1	1	100
Myrtaceae	10	5	38	11	28.95
Poaceae	38	1	100	1	1
Sapindaceae	8	1	11	1	9.09
Sapotaceae	8	1	13	1	7.69
Simaroubaceae	2	1	4	1	50

Table 13: Predicted and residual number of species used as anti-diarrheal plants.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.754997	0.245003
Aristolochiaceae	1.603636	-0.60364
Asteraceae	2.864981	-1.86498
Burseraceae	1.805451	1.194549
Caesalpiniaceae	2.991116	3.008884
Caricaceae	1.603636	-0.60364
Chenopodiaceae	1.603636	-0.60364
Chrysobalanaceae	2.108174	-1.10817
Clusiaceae	2.410897	4.589103
Cucurbitaceae	1.780224	-0.78022
Cyperaceae	3.419973	-0.41997
Euphorbiaceae	2.612712	-1.61271
Fabaceae	2.663166	-1.66317
Hippocrataceae	1.754997	-0.75500
Malpighiaceae	2.209082	2.790918
Meliaceae	1.754997	-0.75500
Mimosaceae	2.511804	-1.51180
Moraceae	1.780224	-0.78022
Myristicaceae	1.603636	-0.60364
Myrtaceae	2.537031	8.462969
Poaceae	4.101099	-3.10110
Sapindaceae	1.855905	-0.85591
Sapotaceae	1.906359	-0.90636
Simaroubaceae	1.679317	-0.67932

Table 14: Number and percent taxa in families used as anti-dysenteric plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Aristolochiaceae	1	1	1	1	100
Caesalpiniaceae	18	1	56	3	5.36
Clusiaceae	9	1	33	5	15.15
Malpighiaceae	7	1	25	3	12
Meliaceae	3	1	7	1	14.29
Myrtaceae	10	4	38	7	18.42
Papaveraceae	1	1	1	1	100
Sapotaceae	8	1	13	1	7.69
Simaroubaceae	2	2	4	2	50

Table 15: Predicted and residual number of species used for treating dysentery.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.594646	-0.59465
Aristolochiaceae	1.122287	-0.12229
Caesalpiniaceae	5.452241	-2.45224
Clusiaceae	3.641533	1.358467
Malpighiaceae	3.011722	-0.01172
Meliaceae	1.594646	-0.59465
Myrtaceae	4.035166	2.964834
Papaveraceae	1.122287	-0.12229
Sapotaceae	2.067005	-1.06700
Simaroubaceae	1.358467	0.641533

Table 16: Number and percent taxa in families used anti-helminthic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Caricaceae	1	1	1	1	100
Cyrillaceae	1	1	2	1	50
Monimiaceae	2	1	2	1	50
Rubiaceae	40	1	135	1	0.7
Simaroubaceae	2	1	4	1	25

Table 17: Number and percent taxa in families used as anti-herpetic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Asteraceae	27	1	51	1	1.96
Clusiaceae	9	1	33	4	12.12
Fabaceae	26	1	43	1	2.33
Meliaceae	3	1	7	1	14.29
Zingiberaceae	2	1	4	1	25

Table 18: Predicted and residual number of species used as anti-herpetic plants.
Species of the Clusiaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Asteraceae	1.811163	-0.81116
Clusiaceae	1.64873	2.35127
Fabaceae	1.738971	-0.73897
Meliaceae	1.414104	-0.41410
Zingiberaceae	1.387032	-0.38703

Table 19: Number and percent taxa used as antihistamine plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Araceae	10	1	37	1	2.7
Burseraceae	5	1	9	1	11.11
Heliconiaceae	1	1	7	1	14.29

Table 20: Number and percent taxa in families used as anti-infective plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	8	1	13	1	7.69
Annonaceae	10	2	22	2	9.09
Asteraceae	27	1	51	1	1.96
Bignoniaceae	12	1	19	1	5.26
Boraginaceae	3	1	8	1	12.5
Cannaceae	1	1	1	1	100
Clusiaceae	9	1	33	3	9.09
Costaceae	1	1	5	3	60
Cyperaceae	19	2	73	3	4.12
Dilleniaceae	5	1	9	1	11.11
Malpighiaceae	7	1	25	2	8
Melastomataceae	28	1	111	1	0.9
Menispermaceae	4	1	6	1	16.67
Passifloraceae	1	1	10	1	10
Poaceae	38	2	100	3	3
Fern Families	38	1	97	1	1.03
Ulmaceae	2	1	3	1	33.33

Table 21: Regression analysis and Parameter estimates of anti-infective plants.
P = 0.4260, not significant; Rsquare = 0.045821; N = 16.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.4458442	0.312719	4.62	0.0004
No. of species in family	0.0049679	0.006059	0.82	0.4260

Table 22: Predicted and residual number of species used as anti-infective plants.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.510427	-0.51043
Annonaceae	1.555139	0.444861
Asteraceae	1.699208	-0.69921
Bignoniaceae	1.540235	-0.54023
Boraginaceae	1.485588	-0.48559
Cannaceae	1.450812	-0.45081
Clusiaceae	1.609786	1.390214
Costaceae	1.470684	1.529316
Cyperaceae	1.808503	1.191497
Dilleniaceae	1.465721	-0.48563
Malpighiaceae	1.570042	0.429958
Melastomataceae	1.997284	-0.99728
Menispermaceae	1.475652	-0.47565
Passifloraceae	1.495523	-0.49552
Poaceae	1.942637	1.057363
Fern Families	1.927733	-0.92773
Ulmaceae	1.460748	-0.46075

Table 23: Number and percent taxa in families used as anti-inflammatory plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Apocynaceae	16	1	32	1	3.13
Cyperaceae	19	1	73	1	1.37
Malpighiaceae	7	1	25	1	4
Menispermaceae	4	1	6	1	16.67
Mimosaceae	9	1	37	1	2.7
Passifloraceae	1	1	10	1	10
Poaceae	38	2	100	2	2
Solanaceae	9	1	25	1	25
Ulmaceae	2	1	3	1	33.33

Table 24: Predicted and residual number of species used to treat inflammation.

Family	Predicted no. of species used	Residual no. of species used
Apocynaceae	1.09113	-0.09113
Cyperaceae	1.411698	-0.41170
Malpighiaceae	1.036399	-0.03640
Menispermaceae	0.887843	0.112157
Mimosaceae	1.130224	-0.13022
Passifloraceae	0.919118	0.080882
Poaceae	1.622803	0.377197
Solanaceae	1.036399	-0.03640
Ulmaceae	0.864387	0.135613

Table 25: Number and percent taxa in families used as anti-irritant plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Clusiaceae	9	1	33	1	3.03
Mimosaceae	9	1	37	2	5.41
Solanaceae	9	1	25	1	4

Table 26: Regression analysis and Parameter estimates of anti-irritant plants.
P value = 0.4380, not significant; Rsquare = 0.315789; N = 4.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.7565789	0.572624	1.32	0.3173
No. of species in family	0.0197368	0.020543	0.96	0.4380

Table 27: Predicted and residual number of species used as anti-irritant plants.

Family	Predicted no. of species used	Residual no. of species used
Amaryllidaceae	0.855263	0.144737
Clusiaceae	1.407895	-0.40789
Mimosaceae	1.486842	0.513158
Solanaceae	1.25	-0.25

Table 28: Number and percent taxa in families used as anti-menorrhagic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Asteraceae	27	1	51	1	1.96
Cyperaceae	19	3	73	3	4.11
Malpighiaceae	7	1	25	1	4
Meliaceae	3	1	7	1	14.29
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	1	135	1	0.74

Table 29: Regression analysis and Parameter estimates of anti-menorrhagic plants.
 $P = 0.8706$, not significant; $R \text{ square} = 0.007476$; $N = 6$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.2366485	0.669424	1.85	0.1384
No. of species in families	0.0014951	0.008614	0.17	0.8706

Table 30: Predicted and residual number of species used as anti-menorrhagic plants.

Family	Predicted no. of species used	Residual no. of species used
Asteraceae	1.3129	-0.31290
Cyperaceae	1.345793	1.654207
Malpighiaceae	1.274027	-0.27403
Meliaceae	1.247114	-0.24711
Pteridophyta	1.381676	-0.38168
Rubiaceae	1.438491	-0.43849

Table 31: Number and percent taxa in families used as anti-microbial plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Malpighiaceae	7	1	25	1	4
Poaceae	38	1	100	1	1

Table 32: Number and percent taxa in families used as anti-pruritic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Alzateaceae	1	1	1	1	100
Apocynaceae	16	2	32	3	9.38
Araceae	10	1	37	1	2.7
Araliaceae	2	1	2	1	50
Arecaceae	13	1	27	1	3.7
Asteraceae	27	1	51	1	1.96
Burseraceae	5	2	9	2	22.22
Cannaceae	1	1	1	1	100
Chenopodiaceae	1	1	1	1	100
Clusiaceae	9	1	33	3	9.09
Cucurbitaceae	4	1	8	1	12.5
Euphorbiaceae	25	1	41	1	2.44
Fabaceae	26	2	43	2	4.65
Malvaceae	4	2	5	2	40
Meliaceae	3	2	7	2	28.57
Mimosaceae	9	1	37	1	2.7
Moraceae	4	1	8	1	12.5
Pteridophyta	38	3	97	3	3.09
Rutaceae	4	1	5	1	20
Verbenaceae	9	1	12	1	8.33
Zingiberaceae	2	1	4	1	25

Table 33: Predicted and residual number of species used to treat itching.

Family	Predicted no. of species used	Residual no. of species used
Alzateaceae	1.168566	-0.16857
Apocynaceae	1.62371	1.37629
Araceae	1.697121	-0.69712
Araliaceae	1.183248	-0.18325
Arecaceae	1.5503	-0.5503
Asteraceae	1.90267	-0.90267
Burseraceae	1.286023	0.713977
Cannaceae	1.168566	-0.16857
Chenopodiaceae	1.168566	-0.16857
Clusiaceae	1.638393	1.361607
Cucurbitaceae	1.27134	-0.27134
Euphorbiaceae	1.755849	-0.75585
Fabaceae	1.785213	0.214787
Malvaceae	1.227294	0.772706
Meliaceae	1.256658	0.743342
Mimosaceae	1.697121	-0.69712
Moraceae	1.27134	-0.27134
Pteridophyta	2.578046	0.421954
Rutaceae	1.227294	-0.22729
Verbenaceae	1.330069	-0.33007
Zingiberaceae	1.212612	-0.21261

Table 34: Number and percent taxa in families used as anti-pyretic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	1	3	2	66.67
Anacardiaceae	6	2	7	2	28.57
Annonaceae	10	1	22	1	4.55
Apiaceae	2	1	2	1	50
Apocynaceae	16	1	32	1	3.13
Arecaceae	13	2	27	2	7.41
Aristolochiaceae	1	1	1	1	100
Asteraceae	27	2	51	3	5.88
Chenopodiaceae	1	1	1	1	100
Costaceae	1	1	5	1	20
Cyperaceae	19	1	73	1	1.37
Euphorbiaceae	25	4	41	4	9.76
Lauraceae	7	1	16	1	6.25
Malpighiaceae	7	2	25	3	12
Malvaceae	4	3	5	1	20
Monimiaceae	2	1	2	1	50
Piperaceae	3	1	22	1	4.55
Poaceae	38	3	100	3	3
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	2	135	2	1.48
Rutaceae	4	2	5	2	40
Scrophulariaceae	6	1	6	1	16.67
Simaroubaceae	2	1	4	1	25
Solanaceae	9	2	25	3	12
Turneraceae	5	2	6	2	33.33
Verbenaceae	9	2	12	2	16.67
Zingiberaceae	2	1	4	1	25

Table 35: Predicted and residual number of species used as anti-pyretics.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.492148	0.507852
Anacardiaceae	1.521235	0.478765
Annonaceae	1.630309	-0.63031
Apiaceae	1.484877	-0.48488
Apocynaceae	1.703025	-0.70302
Arecaceae	1.666667	0.333333
Aristolochiaceae	1.477605	-0.47761
Asteraceae	1.841185	1.158815
Chenopodiaceae	1.477605	-0.47761
Costaceae	1.506692	-0.50669
Cyperaceae	2.00116	-1.00116
Euphorbiaceae	1.768469	2.231531
Lauraceae	1.586679	-0.58668
Malpighiaceae	1.652123	1.347877
Malvaceae	1.506692	-0.50669
Monimiaceae	1.484877	-0.48488
Piperaceae	1.630309	-0.63031
Poaceae	2.197493	0.802507
Pteridophyta	2.175678	-1.17568
Rubiaceae	2.451999	-0.45200
Rutaceae	1.506692	0.493308
Scrophulariaceae	1.513963	-0.51396
Simaroubaceae	1.49942	-0.49942
Solanaceae	1.652123	1.347877
Turneraceae	1.513963	0.486037
Verbenaceae	1.557593	0.442407
Zingiberaceae	1.49942	-0.49942

Table 36: Number and percent taxa in families used as antiseptic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	2	3	2	66.67
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	1	4.55
Arecaceae	13	1	27	1	3.704
Asteraceae	27	1	51	1	1.96
Clusiaceae	9	3	33	4	12.12
Crassulaceae	1	3	1	1	100
Cyperaceae	19	2	73	2	2.74
Dilleniaceae	5	1	9	1	11.11
Euphorbiaceae	25	2	41	2	4.88
Fabaceae	26	1	43	1	2.33
Lecythidaceae	3	1	7	2	28.57
Loranthaceae	7	2	12	2	16.67
Marcgraviaceae	4	1	4	1	25
Mimosaceae	9	2	37	2	5.41
Musaceae	1	1	1	1	100
Myrtaceae	10	2	38	2	5.26
Portulacaceae	1	1	1	1	100
Pteridophyta	38	1	97	1	1.03
Scrophulariaceae	6	1	6	1	16.67
Solanaceae	9	1	25	1	4

Table 37: Regression analysis and Parameter estimates of antiseptic plants.

P = 0.5460, not significant; Rsquare = 0.019500; N = 21.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.3718573	0.237538	5.78	0.0000
No. of species in family	0.0040725	0.006625	0.61	0.5460

Table 38: Predicted and residual number of species used as antiseptic plants.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.384075	0.615925
Anacardiaceae	1.400365	-0.40036
Annonaceae	1.461452	-0.46145
Arecaceae	1.481814	-0.48181
Asteraceae	1.579554	-0.57955
Clusiaceae	1.506249	2.493751
Crassulaceae	1.37593	-0.37593
Cyperaceae	1.669149	0.330851
Dilleniaceae	1.40851	-0.40851
Euphorbiaceae	1.538829	0.461171
Fabaceae	1.546974	-0.54697
Lecythidaceae	1.400365	0.599635
Loranthaceae	1.420727	0.579273
Marcgraviaceae	1.388147	-0.38815
Mimosaceae	1.522539	0.477461
Musaceae	1.37593	-0.37593
Myrtaceae	1.526612	0.473388
Portulacaceae	1.37593	-0.37593
Pteridophyta	1.766888	-0.76689
Scrophulariaceae	1.396292	-0.39629
Solanaceae	1.473669	-0.47367

Table 39: Number and percent taxa in families used to treat asthma.

It is interesting to note the one species of Pteridophyta and one species of Poaceae are used.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Aristolochiaceae	1	1	1	1	100
Chrysobalanaceae	4	1	21	1	4.76
Commelinaceae	5	1	6	1	16.67
Costaceae	1	1	5	1	20
Fabaceae	26	1	43	1	2.33
Lamiaceae	4	1	8	1	12.5
Loranthaceae	7	1	12	1	8.33
Malpighiaceae	7	1	25	1	4
Monimiaceae	2	1	2	1	50
Moraceae	4	1	8	1	12.5
Poaceae	38	1	100	1	1
Pteridophyta	38	1	97	1	1.03
Scrophulariaceae	6	1	6	1	16.67
Solanaceae	9	1	25	1	4
Verbenaceae	9	1	12	1	8.33

Table 40: Number and percent taxa in families used to treat back pain.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	1	3	1	33.33
Asteraceae	27	1	51	1	1.96
Caesalpiniaceae	18	1	56	1	1.79
Cecropiaceae	3	2	5	3	60
Clusiaceae	9	1	33	1	3.03
Dilleniaceae	5	3	9	4	44.44
Scrophulariaceae	6	1	6	1	16.67
Smilacaceae	1	1	4	2	50
Verbenaceae	9	1	12	1	8.33

Table 41: Regression analysis and Parameter estimates of plants used to treat back pain.
 $P = 0.2677$, not significant; $R_{\text{square}} = 0.171549$; $N = 9$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.1022304	0.512234	4.10	0.0045
No. of species in family	-0.021900	0.018190	-1.20	0.2677

Table 42: Predicted and residual number of species used to treat back pain.
 Species of Asteraceae, Caesalpiniaceae, Cecropiaceae and Dilleniaceae are more likely to be used for treating back pain.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	2.036531	-1.03653
Asteraceae	0.985338	0.014662
Caesalpiniaceae	0.875839	0.124161
Cecropiaceae	1.992731	1.007269
Clusiaceae	1.379535	-0.37954
Dilleniaceae	1.905132	2.094868
Scrophulariaceae	1.970831	-0.97083
Smilacaceae	2.014631	-0.01463
Verbenaceae	1.839432	-0.83943

Table 43: Number and percent taxa in families used to treat biliousness.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Caryophyllaceae	1	1	1	1	100
Chrysobalanaceae	4	1	21	1	4.76
Cucurbitaceae	4	1	8	1	12.5
Gentianaceae	8	1	14	2	14.29
Malpighiaceae	7	1	25	1	4
Mimosaceae	9	1	37	1	2.7

Table 44: Regression analysis and Parameter estimates of plants used to treat biliousness.
 $P = 0.7914$, not significant; $RSquare = 0.019595$; $N = 6$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.2453441	0.333871	3.73	0.0203
No. of species in family	-0.004453	0.015750	-0.28	0.7914

Table 45: Predicted and residual number of species used to treat biliousness.
 Species of the Gentianaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Caryophyllaceae	1.240891	-0.24089
Chrysobalanaceae	1.151822	-0.15182
Cucurbitaceae	1.209717	-0.20972
Gentianaceae	1.182996	0.817004
Malpighiaceae	1.134008	-0.13401
Mimosaceae	1.080567	-0.08057

Table 46: Number and percent taxa used as blood purifying plants

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Asteraceae	27	1	51	1	1.96
Cecropiaceae	3	1	5	1	20
Cucurbitaceae	4	1	8	1	12.5
Malpighiaceae	7	1	25	1	4

Table 47: Number and percent taxa in families used to treat bronchitis.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	1	22	1	4.55
Burseraceae	5	1	9	1	11.11
Poaceae	38	1	100	1	1

Table 48: Number and percent taxa in families used to treat "bush yaws".

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Araceae	10	2	37	2	5.41
Asteraceae	27	1	51	1	1.96
Bignoniaceae	12	1	19	1	5.26
Burseraceae	5	1	9	1	11.11
Cannaceae	1	1	1	1	100
Chenopodiaceae	1	1	1	1	100
Clusiaceae	9	2	33	4	12.12
Cyperaceae	19	1	73	1	1.37
Fabaceae	26	1	43	1	2.33
Gentianaceae	8	1	14	1	7.29
Icacinaceae	4	1	4	1	25
Lamiaceae	4	1	8	1	12.5
Loranthaceae	7	1	12	1	8.33
Malvaceae	4	1	5	1	20
Monimiaceae	2	1	2	1	50
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	1	135	1	0.74
Solanaceae	9	2	25	5	20
Verbenaceae	9	1	12	1	12.33

Table 49: Regression analysis and Parameter estimates of plants used to treat "bush yaws".

P = 0.9619, not significant; Rsquare = 0.000139; N = 19.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.4321583	0.349896	4.09	0.0008
No. of species in family	-0.000363	0.007484	-0.05	0.9619

Table 50: Predicted and residual number of species used to treat "bushyaws".

Species of Araceae, Clusiaceae and Solanaceae are more likely to be used for treating this disorder.

Family	Predicted no. of species used	Residual no. of species used
Araceae	1.418721	0.581279
Asteraceae	1.413636	-0.41364
Bignoniaceae	1.425258	-0.42526
Burseraceae	1.42889	-0.42889
Cannaceae	1.431795	-0.43180
Chenopodiaceae	1.431795	-0.43180
Clusiaceae	1.420173	2.579827
Cyperaceae	1.405646	-0.40565
Fabaceae	1.416542	-0.41654
Gentianaceae	1.427074	-0.42707
Icacinaceae	1.430706	-0.43071
Lamiaceae	1.429253	-0.42925
Loranthaceae	1.4278	-0.42780
Malvaceae	1.430342	-0.43034
Monimiaceae	1.431432	-0.43143
Pteridophyta	1.39693	-0.39693
Rubiaceae	1.383129	-0.38313
Solanaceae	1.423079	3.576921
Verbenaceae	1.4278	-0.42780

Table 51: Number and percent taxa in families used to treat chicken pox.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Apiaceae	2	1	2	1	50
Apocynaceae	16	1	32	1	3.13
Arecaceae	13	1	27	1	3.7
Asteraceae	27	1	51	3	5.82
Chrysobalanaceae	4	1	21	1	4.76
Clusiaceae	9	1	33	1	3.03
Gentianaceae	8	1	14	2	14.29
Icacinaceae	2	1	4	1	25
Malvaceae	4	2	5	2	40
Meliaceae	3	1	7	2	28.58
Mimosaceae	9	1	37	1	2.7
Proteaceae	2	1	2	1	50
Pteridophyta	38	2	97	2	2.06
Sapindaceae	8	1	11	1	9.09
Tiliaceae	5	1	6	1	16.67
Ulmaceae	2	1	3	1	33.33
Verbenaceae	9	3	12	3	25

Table 52: Regression analysis and Parameter estimates of plants used to treat chicken pox.

P = 0.2357, not significant; Rsquare = 0.086654; N = 18.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.265134	0.219000	5.78	0.0000
No. of species in family	0.0086997	0.007061	1.23	0.2357

Table 53: Predicted and residual number of species used to treat chicken pox. Species of the Asteraceae, Gentianaceae, Malvaceae, Meliaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.326032	-0.32603
Apiaceae	1.282533	-0.28253
Apocynaceae	1.543524	-0.54352
Arecaceae	1.500026	-0.50003
Asteraceae	1.708819	1.291181
Chrysobalanaceae	1.447828	-0.44783
Clusiaceae	1.552224	-0.55222
Gentianaceae	1.38693	0.613070
Icacinaceae	1.299933	-0.29993
Malvaceae	1.308632	0.691368
Meliaceae	1.326032	0.673968
Mimosaceae	1.587023	-0.58702
Proteaceae	1.282533	-0.28253
Pteridophyta	2.109005	-0.10900
Sapindaceae	1.360831	-0.36083
Tiliaceae	1.317332	-0.31733
Ulmaceae	1.291233	-0.29123
Verbenaceae	1.36953	1.63047

Table 54: Number and percent taxa in families used to treat colds.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	1	3	1	33.33
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	2	9.09
Apiaceae	2	1	2	1	50
Aristolochiaceae	1	1	2	1	50
Asteraceae	27	2	51	2	3.92
Burseraceae	5	1	9	1	11.11
Caryophyllaceae	1	1	1	1	100
Chenopodiaceae	1	1	1	1	100
Commelinaceae	5	1	6	1	16.67
Costaceae	1	1	5	2	40
Fabaceae	26	1	43	1	2.33
Icacinales	4	1	4	1	25
Lamiaceae	4	1	8	1	12.5
Malpighiaceae	7	3	25	3	12
Meliaceae	3	1	7	1	14.29
Mimosaceae	9	1	37	1	2.7
Monimiaceae	2	1	2	1	50
Moraceae	4	1	8	4	50
Myrtaceae	10	2	38	4	10.53
Poaceae	38	3	100	3	3
Rubiaceae	40	1	135	1	0.74
Rutaceae	4	1	5	2	40
Scrophulariaceae	6	1	6	1	16.67
Simaroubaceae	2	1	4	1	25
Solanaceae	9	1	25	1	4
Verbenaceae	9	2	12	2	16.67
Zingiberaceae	2	1	4	1	25

Table 55: Predicted and residual number of species used to treat colds.
Species of the Annonaceae, Asteraceae, Costaceae, Malpighiaceae, Moraceae, Myrtaceae, Poaceae, Rutaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.418171	-0.41817
Anacardiaceae	1.445148	-0.44515
Annonaceae	1.546312	0.453688
Apiaceae	1.411427	-0.41143
Aristolochiaceae	1.411427	-0.41143
Asteraceae	1.741897	0.258103
Burseraceae	1.458637	-0.45864
Caryophyllaceae	1.404682	-0.40468
Chenopodiaceae	1.404682	-0.40468
Commelinaceae	1.438404	-0.43840
Costaceae	1.431659	0.568341
Fabaceae	1.687943	-0.68794
Icacinaceae	1.424915	-0.42492
Lamiaceae	1.451892	-0.45189
Malpighiaceae	1.566545	1.433455
Meliaceae	1.445148	-0.44515
Mimosaceae	1.647477	-0.64748
Monimiaceae	1.411427	-0.41143
Moraceae	1.451892	2.548108
Myrtaceae	1.654221	2.345779
Poaceae	2.072367	0.927633
Rubiaceae	2.308418	-1.30842
Rutaceae	1.431659	0.568341
Scrophulariaceae	1.438404	-0.43840
Simaroubaceae	1.424915	-0.42492
Solanaceae	1.566545	-0.56655
Verbenaceae	1.47887	0.521130
Zingiberaceae	1.424915	-0.42492

Table 56: Number and percent taxa in families used to treat cold sweat.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	1	3	1	33.33
Annonaceae	10	1	22	1	4.55
Lauraceae	7	1	16	1	6.25
Malpighiaceae	7	2	25	4	16
Malvaceae	4	1	5	1	20
Pteridophyta	38	1	97	1	1.03
Solanaceae	9	1	25	1	4
Turneraceae	5	1	6	1	16.67
Verbenaceae	9	1	12	1	8.33

Table 57: Predicted and residual number of species used to treat cold sweat. Species of the Malpighiaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.319021	-0.31902
Annonaceae	1.332322	-0.33232
Lauraceae	1.328122	-0.32812
Malpighiaceae	1.334422	2.665578
Malvaceae	1.320421	-0.32042
Pteridophyta	1.384826	-0.38483
Solanaceae	1.334422	-0.33442
Turneraceae	1.321121	-0.32112
Verbenaceae	1.325322	-0.32532

Table 58: Number and percentage taxa in families used to treat conjunctivitis.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Euphorbiaceae	25	1	41	1	2.44
Lamiaceae	4	1	8	1	12.5
Menispermaceae	4	1	6	1	16.67
Mimosaceae	9	1	37	1	2.7
Poaceae	38	1	100	1	1

Table 59: Regression analysis and Parameter estimates of plants used to treat coughing.
P = 0.0756, significant; RSquare = 0.195410; N = 17.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.1981692	0.137205	8.73	0.0000
No. of species in family	0.0064647	0.003387	1.91	0.0756

Table 60: Predicted and residual number of species used to treat coughing.
Species of the Malpighiaceae, Moraceae, Poaceae, Rutaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.217563	-0.21756
Anacardiaceae	1.243422	-0.24342
Annonaceae	1.340392	-0.34039
Aristolochiaceae	1.211099	-0.21110
Asteraceae	1.527868	-0.52787
Chenopodiaceae	1.204634	-0.20463
Costaceae	1.230493	-0.23049
Malpighiaceae	1.359786	0.640214
Melastomataceae	1.915749	0.084251
Meliaceae	1.243422	-0.24342
Moraceae	1.249887	0.750113
Myrtaceae	1.443827	-0.44383
Poaceae	1.844637	0.155363
Rutaceae	1.230493	0.769507
Scrophulariaceae	1.236957	-0.23696
Verbenaceae	1.275745	0.724255
Zingiberaceae	1.224028	-0.22403

Table 61: Regression analysis and Parameter estimates of plants used to treat cracked heels.

P = 0.0960; significant; RSquare = 0.977437; N = 3.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.8531889	0.101665	8.39	0.0755
No. of species in family	0.0342960	0.005211	6.58	0.0960

Table 62: Predicted and residual number of species used to treat cracked heels.
Species of the Clusiaceae and Myristicaceae are more likely to be used for this purpose.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.093261	-0.09326
Clusiaceae	1.984958	0.015042
Myristicaceae	0.921781	0.078219

Table 63: Number and percent taxa in families used to treat superficial cuts and wounds.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	1	22	1	4.55
Araceae	10	1	37	1	2.7
Bignoniaceae	12	1	19	1	5.26
Caesalpiniaceae	18	1	56	1	1.79
Clusiaceae	9	2	33	2	6.06
Cyperaceae	19	1	73	1	1.37
Euphorbiaceae	25	3	41	3	7.31
Lecythidaceae	3	1	7	1	14.29
Loranthaceae	7	2	12	2	16.67
Mimosaceae	9	1	37	1	2.7
Myrtaceae	10	1	38	1	2.63
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	1	135	1	0.74

Table 64: Regression analysis and Parameter estimates of plants used to treat superficial cuts and wounds.

P = 0.4741, not significant; RSquare = 0.047568; N = 13.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.48492	0.298224	4.98	0.0004
No. of species in family	-0.003796	0.005121	-0.74	0.4741

Table 65: Predicted and residual number of species used to treat superficial cuts and wounds.

Species of the Clusiaceae, Euphorbiaceae, Loranthaceae and Rubiaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Annonaceae	1.401416	-0.40142
Araceae	1.344481	-0.34448
Bignoniaceae	1.412803	-0.41280
Caesalpiniaceae	1.272364	-0.27236
Clusiaceae	1.359664	0.640336
Cyperaceae	1.207838	-0.20784
Euphorbiaceae	1.329298	1.670702
Lecythidaceae	1.45835	-0.45835
Loranthaceae	1.439372	0.560628
Mimosaceae	1.344481	-0.34448
Myrtaceae	1.340685	-0.34069
Pteridophyta	1.116742	-0.11674
Rubiaceae	0.972507	0.027493

Table 66: Number and percent taxa in families used to treat dermatitis.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	8	1	13	1	7.69
Anacardiaceae	6	1	7	1	14.29
Asteraceae	27	1	51	1	1.96
Cannaceae	1	1	1	1	100
Clusiaceae	9	1	33	2	6.06
Gentianaceae	8	1	14	1	7.29
Malvaceae	4	1	5	1	20
Meliaceae	3	1	7	2	29.58
Menispermaceae	4	1	6	1	16.67
Myrtaceae	10	1	38	1	2.63
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	1	135	2	1.28
Rutaceae	4	1	5	1	20
Tiliaceae	5	1	6	1	16.67
Ulmaceae	2	1	3	1	33.33
Verbenaceae	9	1	12	2	16.67
Zingiberaceae	2	1	4	1	25

Table 67: Regression analysis and Parameter estimates of plants used to treat dermatitis.
P = 0.2070, not significant; R Square = 0.103926, N=17.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.1382158	0.127145	8.95	<.0001
No. of species in family	0.0037765	0.002863	1.32	0.2070

Table 68: Predicted and residual number of species used to treat dermatitis.

Species of the Clusiaceae, Meliaceae, Rubiaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.18731	-0.18731
Anacardiaceae	1.164651	-0.16465
Asteraceae	1.330817	-0.33082
Cannaceae	1.141992	-0.14199
Clusiaceae	1.26284	0.73716
Gentianaceae	1.191087	-0.19109
Malvaceae	1.157098	-0.1571
Meliaceae	1.164651	0.835349
Menispermaceae	1.160875	-0.16087
Myrtaceae	1.281723	-0.28172
Pteridophyta	1.504537	-0.50454
Rubiaceae	1.648044	0.351956
Rutaceae	1.157098	-0.1571
Tiliaceae	1.160875	-0.16087
Ulmaceae	1.149545	-0.14955
Verbenaceae	1.183534	0.816466
Zingiberaceae	1.153322	-0.15332

Table 69: Number and percent taxa used to treat drooling babies.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Boraginaceae	3	1	8	1	12.5
Malpighiaceae	7	1	25	1	4
Mimosaceae	9	1	37	1	2.7

Table 70: Number and percent taxa in families used to treat eczema.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	8	1	13	1	7.69
Anacardiaceae	6	1	7	1	14.29
Apocynaceae	16	1	32	1	3.13
Asteraceae	27	1	51	1	1.96
Cannaceae	1	1	1	1	100
Clusiaceae	9	2	33	2	6.06
Myrtaceae	10	1	38	1	2.63
Meliaceae	3	2	7	2	28.57
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	2	135	2	1.48
Rutaceae	4	1	5	1	20
Tiliaceae	5	1	6	1	16.67
Ulmaceae	2	1	3	1	33.33
Verbenaceae	9	2	12	2	16.67
Zingiberaceae	2	1	4	1	25

Table 71: Regression analysis and Parameter estimates of plants used to treat eczema.
P = 0.3204, not significant; Rsquare = 0.075862; N = 15.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.1706482	0.150136	7.80	0.0000
No. of species in family	0.0032439	0.003140	1.03	0.3204

Table 72: Predicted and residual number of species used to treat eczema.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.212818	-0.21282
Anacardiaceae	1.193355	-0.19336
Apocynaceae	1.274452	-0.27445
Asteraceae	1.336085	-0.33609
Cannaceae	1.173892	-0.17389
Clusiaceae	1.277696	0.722304
Myrtaceae	1.293915	-0.29392
Meliaceae	1.193355	0.806645
Pteridophyta	1.485303	-0.48530
Rubiaceae	1.60857	0.391430
Rutaceae	1.186868	-0.18687
Tiliaceae	1.190111	-0.19011
Ulmaceae	1.18038	-0.18038
Verbenaceae	1.209575	0.790425
Zingiberaceae	1.183624	-0.18362

Table 73: Number and percent taxa in families used as emetics.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Caesalpiniaceae	18	1	56	1	1.79
Commelinaceae	5	1	6	1	16.67
Lycopodiaceae	2	1	3	1	33.33
Meliaceae	3	1	7	1	14.29
Mimosaceae	9	1	37	1	2.7
Myristicaceae	2	2	2	2	100
Pteridophyta	38	1	97	1	1.03

Table 74: Predicted and residual number of species used as emetics.

Family	Predicted no. of species used	Residual no. of Species used
Caesalpiniaceae	1.049836	-0.04984
Commelinaceae	1.226779	-0.22678
Lycopodiaceae	1.237395	-0.23740
Meliaceae	1.22324	-0.22324
Mimosaceae	1.117074	-0.11707
Myristicaceae	1.240934	0.759066
Pteridophyta	0.904743	0.095257

Table 75: Number and percent taxa in families used as emollient plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Apocynaceae	16	1	32	1	3.12
Araceae	10	2	37	2	5.41
Araliaceae	2	1	2	1	50
Clusiaceae	9	1	33	1	3.03
Combretaceae	3	1	7	1	14.29
Crassulaceae	1	1	1	1	100
Euphorbiaceae	25	1	41	1	2.44
Gentianaceae	8	1	14	1	7.14
Gesneriaceae	14	1	20	1	5
Lamiaceae	4	1	8	1	12.5
Lecythidaceae	3	1	7	1	14.29
Loranthaceae	7	2	12	2	16.67
Menispermaceae	4	1	6	1	16.67
Moraceae	4	1	8	1	12.5
Passifloraceae	1	1	10	1	10
Pteridophyta	38	2	97	2	2.06
Rubiaceae	40	1	135	1	1.48

Table 76: Regression analysis and Parameter estimates of plants used as emollient agents.
 $P = 0.2448$, not significant; $RSquare = 0.083512$; $N = 18$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.0842307	0.112324	9.65	0.0000
No. of species in family	0.0031239	0.002587	1.21	0.2448

Table 77: Predicted and residual number of species used as emollient plants.

Family	Predicted no. of species used	Residual no. of species used
Amaryllidaceae	1.09985	-0.09985
Apocynaceae	1.184195	-0.18420
Araceae	1.199815	0.800185
Araliaceae	1.090479	-0.09048
Clusiaceae	1.187319	-0.18732
Combretaceae	1.106098	-0.10610
Crassulaceae	1.087355	-0.08735
Euphorbiaceae	1.21231	-0.21231
Gentianaceae	1.127965	-0.12797
Gesneriaceae	1.146708	-0.14671
Lamiaceae	1.109222	-0.10922
Lecythidaceae	1.106098	-0.10610
Loranthaceae	1.121717	0.878283
Menispermaceae	1.102974	-0.10297
Moraceae	1.109222	-0.10922
Passifloraceae	1.11547	-0.11547
Pteridophyta	1.387248	0.612752
Rubiaceae	1.505956	-0.50596

Table 78: Number and percent taxa in families used to treat eye infections.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Apocynaceae	16	1	32	3	9.38
Asteraceae	27	1	51	1	1.96
Bignoniaceae	12	1	19	1	5.263
Clusiaceae	9	1	33	2	6.06
Euphorbiaceae	25	1	41	1	2.44
Lamiaceae	4	1	5	1	20
Menispermaceae	4	1	6	1	16.67
Mimosaceae	9	1	37	1	2.7
Passifloraceae	1	1	10	1	10
Scrophulariaceae	6	1	6	1	16.67
Ulmaceae	2	1	3	1	33.33

Table 79: Regression analysis and Parameter estimates of plants used to treat eye infections.

P = 0.4113, not significant; RSquare = 0.076202; N = 11.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.0436303	0.331240	3.15	0.0117
No. of species in family	0.0103706	0.012036	0.86	0.4113

Table 80: Predicted and residual number of species used to treat eye infections. Species of the Clusiaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Apocynaceae	1.375491	1.624509
Asteraceae	1.572533	-0.57253
Bignoniaceae	1.240673	-0.24067
Clusiaceae	1.385862	0.614138
Euphorbiaceae	1.468827	-0.46883
Lamiaceae	1.095484	-0.09548
Menispermaceae	1.105854	-0.10585
Mimosaceae	1.427344	-0.42734
Passifloraceae	1.147337	-0.14734
Scrophulariaceae	1.105854	-0.10585
Ulmaceae	1.074742	-0.07474

Table 81: Number and percent taxa in families used as fish poison.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Agavaceae	1	1	1	1	100
Annonaceae	10	1	22	1	4.55
Boraginaceae	3	1	8	1	12.5
Fabaceae	26	3	43	6	13.95
Menispermaceae	4	1	6	1	16.67
Mimosaceae	9	1	37	1	2.7
Sapindaceae	8	1	11	3	27.27

Table 82: Predicted and residual number of species used as fish poison plants.

Family	Predicted no. of species used	Residual no. of species used
Agavaceae	1.063966	-0.06397
Annonaceae	1.854024	-0.85402
Boraginaceae	1.327319	-0.32732
Fabaceae	2.644082	1.355918
Menispermaceae	1.252075	-0.25208
Mimosaceae	2.418351	-1.41835
Sapindaceae	1.440184	1.559816

Table 83: Number and percent species used as flavouring plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Apiaceae	2	1	2	1	50
Bixaceae	1	1	1	1	100
Lamiaceae	7	1	16	1	6.67
Solanaceae	9	2	25	2	8
Zingiberaceae	2	1	4	1	25

Table 84: Predicted and residual number of species used as flavouring plants.

Family	Predicted no. of species used	Residual no. of species used
Apiaceae	0.934723	0.065277
Bixaceae	0.899819	0.100181
Lamiaceae	1.423391	-0.42339
Solanaceae	1.737534	0.262466
Zingiberaceae	1.004533	-0.00453

Table 85: Regression analysis and Parameter estimates of flavouring plants.
 $P = 0.0894$; significant; $R^2 = 0.671917$; $N = 5$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.8649139	0.189137	4.57	0.0196
No. of species in family	0.0349048	0.014082	2.48	0.0894

Table 86: Number and percent taxa in families used to treat fungal infections.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	1	1	2	1	50
Alzateaceae	1	1	1	1	100
Anacardiaceae	2	1	2	1	50
Apocynaceae	16	2	32	4	12.5
Araliaceae	6	1	7	1	14.29
Asteraceae	27	2	51	2	3.92
Bixaceae	1	1	1	1	100
Burseraceae	5	1	9	1	11.11
Clusiaceae	9	1	33	5	15.15
Crassulaceae	1	1	1	1	100
Fabaceae	26	1	43	1	2.33
Gentianaceae	8	1	14	1	7.14
Lamiaceae	4	1	8	1	12.5
Meliaceae	3	2	7	2	28.57
Mimosaceae	9	1	37	1	2.7
Monimiaceae	2	1	2	1	50
Myrtaceae	10	2	38	2	5.26
Papaveraceae	1	1	1	1	100
Poaceae	38	1	100	1	1
Rubiaceae	40	1	135	1	0.7
Rutaceae	4	1	5	1	20
Tiliaceae	5	1	6	1	16.67
Verbenaceae	9	1	12	1	12.5
Zingiberaceae	2	1	4	1	25

Table 87: Predicted and residual number of species used to treat fungal infections.

Family	Predicted no. species used	Residual no. of species used
Acanthaceae	1.33945	-0.33945
Alzateaceae	1.335766	-0.33577
Anacardiaceae	1.33945	-0.33945
Apocynaceae	1.449979	2.550021
Araliaceae	1.357872	-0.35787
Asteraceae	1.51998	0.480020
Bixaceae	1.335766	-0.33577
Burseraceae	1.36524	-0.36524
Clusiaceae	1.453663	3.546337
Crassulaceae	1.335766	-0.33577
Fabaceae	1.490506	-0.49051
Gentianaceae	1.383662	-0.38366
Lamiaceae	1.361556	-0.36156
Meliaceae	1.357872	0.642128
Mimosaceae	1.4684	-0.4684
Monimlaceae	1.33945	-0.33945
Myrtaceae	1.472084	0.527916
Papaveraceae	1.335766	-0.33577
Poaceae	1.700509	-0.70051
Rubiaceae	1.829459	-0.82946
Rutaceae	1.350503	-0.35050
Tiliaceae	1.354188	-0.35419
Verbenaceae	1.376293	-0.37629
Zingiberaceae	1.346819	-0.34682

Table 88: Number and percent taxa in families used as hallucinogenic plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Lamiaceae	4	1	8	1	12.5
Solanaceae	9	1	25	1	4

Table 89: Number and percent taxa in families used for herbal baths.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	2	3	2	66.67
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	2	9.09
Apiaceae	2	1	2	1	50
Arecaceae	13	2	27	2	7.41
Aristolochiaceae	1	1	1	1	100
Asteraceae	27	2	51	2	3.92
Burseraceae	5	1	9	1	11.11
Chenopodiaceae	1	1	1	1	100
Clusiaceae	9	1	33	1	3.03
Euphorbiaceae	25	1	41	1	2.44
Lauraceae	7	1	16	1	6.25
Malpighiaceae	7	2	25	3	12
Malvaceae	4	3	5	3	60
Monimiaceae	2	1	2	1	50
Piperaceae	3	1	22	1	4.55
Pteridophyta	38	1	97	1	1.03
Rubiaceae	40	1	135	1	0.0074
Scrophulariaceae	6	1	6	1	16.67
Solanaceae	9	2	25	2	8
Turneraceae	5	2	6	2	33.33
Verbenaceae	9	2	12	2	16.67

Table 90: Regression analysis and Parameter estimates of plants used for herbal baths.

P = 0.5178, not significant; Rsquare = 0.021211, N = 22.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.5738117	0.183585	8.57	0.0000
No. of species in family	-0.002963	0.004501	-0.66	0.5178

Table 91: Predicted and residual number of species used for herbal baths.
The species with positive residuals are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Amaranthaceae	1.564922	0.435078
Anacardiaceae	1.553069	-0.55307
Annonaceae	1.50862	0.491380
Apiaceae	1.567885	-0.56789
Arecaceae	1.493804	0.506196
Aristolochiaceae	1.570848	-0.57085
Asteraceae	1.422686	0.577314
Burseraceae	1.547143	-0.54714
Chenopodiaceae	1.570848	-0.57085
Clusiaceae	1.476025	-0.47602
Euphorbiaceae	1.452319	-0.45232
Lauraceae	1.5264	-0.52640
Malpighiaceae	1.499731	1.500269
Malvaceae	1.558996	1.441004
Monimiaceae	1.567885	-0.56789
Piperaceae	1.50862	-0.50862
Pteridophyta	1.286377	-0.28638
Rubiaceae	1.173774	-0.17377
Scrophulariaceae	1.556032	-0.55603
Solanaceae	1.499731	0.500269
Turneraceae	1.556032	0.443968
Verbenaceae	1.538253	0.461747

Table 92: Number and percent taxa in families used to treat hypertension.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	2	22	3	13.64
Caricaceae	1	1	1	1	100
Cucurbitaceae	4	1	8	1	12.5
Lauraceae	7	1	16	1	6.25
Loranthaceae	7	1	12	1	8.33
Malpighiaceae	7	1	25	1	4
Piperaceae	3	1	22	1	4.55

Table 93: Regression analysis and Parameter estimates of anti-hypertensive plants.
P = 0.4443, not significant; Rsquare = 0.121136; N = 7.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.8271293	0.625497	1.32	0.2433
No. of species in family	0.0302839	0.036480	0.83	0.4443

Table 94: Predicted and residual number of species used to treat hypertension.

Family	Predicted no. of species used	Residual no. of species used
Annonaceae	1.493375	1.506625
Caricaceae	0.857413	0.142587
Cucurbitaceae	1.069401	-0.06940
Lauraceae	1.311672	-0.31167
Loranthaceae	1.190536	-0.19054
Malpighiaceae	1.584227	-0.58423
Piperaceae	1.493375	-0.49338

Table 95: Number and percent taxa in families used to treat impotence.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Clusiaceae	9	1	33	1	3.03
Dilleniaceae	5	3	9	5	55.55
Smilacaceae	1	1	4	1	25

Table 96: Regression analysis and Parameter estimates of plants used to treat impotence.
P = 0.7698, not significant; RSquare = 0.125173; N = 3.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.6061026	2.077765	1.25	0.4285
No. of spcies in family	-0.039528	0.104500	-0.38	0.7698

Table 97: Predicted and residual number of species used to treat impotence.
Species of the Dilleniaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Clusiaceae	1.301664	-0.30166
Dilleniaceae	2.250347	1.749653
Smilacaceae	2.447989	-1.44799

Table 98: Number and percent taxa in families used to treat influenza.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Amaranthaceae	3	1	3	1	33.33
Anacardiaceae	6	1	7	1	14.29
Arecaceae	13	1	27	1	3.70
Poaceae	38	2	100	2	2
Scrophulariaceae	6	1	6	1	16.67

Table 99: Regression analysis and Parameter estimates of plants used to treat influenza.
 $P = 0.0054$; significant; $RSquare = 0.946422$; $N = 5$.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.8967207	0.067773	13.23	0.0009
No. of species in family	0.0106042	0.001457	7.28	0.0054

Table 100: Predicted and residual number of species used to treat influenza.
 Species of *Amaranthaceae*, *Anacardiaceae*, *Poaceae* and *Scrophulariaceae* are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
<i>Amaranthaceae</i>	0.928533	0.071467
<i>Anacardiaceae</i>	0.970950	0.029050
<i>Arecaceae</i>	1.183033	-0.18303
<i>Poaceae</i>	1.957138	0.042862
<i>Scrophulariaceae</i>	0.960346	0.039654

Table 101: Number and percent taxa in families used as insect repellent.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
<i>Asteraceae</i>	27	1	51	1	1.96
<i>Bignoniaceae</i>	12	1	19	1	5.26
<i>Lamiaceae</i>	4	1	8	1	12.5
<i>Meliaceae</i>	3	1	7	1	14.28

Table 102: Number and taxa in families used as insecticide.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
<i>Fabaceae</i>	26	2	43	2	4.65
<i>Meliaceae</i>	3	1	7	1	14.29
<i>Rubiaceae</i>	40	1	135	1	0.74
<i>Tiliaceae</i>	5	1	6	1	16.67

Table 103: Predicted and residual number of species used as insecticide.
Species of the Fabaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Fabaceae	1.252044	0.747956
Meliaceae	1.267535	-0.26753
Rubiaceae	1.212456	-0.21246
Tiliaceae	1.267965	-0.26797

Table 104: Number and percent taxa in families used as intoxicants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Clusiaceae	9	1	33	1	3.03
Erythroxylaceae	1	1	3	1	33.33
Solanaceae	9	1	25	1	4

Table 105: Number and percent taxa in families used to treat malarial infections.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Annonaceae	10	1	22	1	4.55
Apiaceae	2	1	2	1	50
Apocynaceae	16	2	32	8	25
Arecaceae	13	1	27	1	3.703
Asteraceae	27	3	51	3	3.703
Caricaceae	1	1	1	1	100
Caryophyllaceae	1	1	1	1	100
Cecropiaceae	3	1	5	1	20
Cyperaceae	19	1	73	1	1.369
Euphorbiaceae	25	1	41	1	2.439
Fabaceae	26	1	43	1	2.325
Loranthaceae	7	1	12	1	8.333
Malpighiaceae	7	2	25	3	12
Meliaceae	3	1	7	1	14.29
Monimiaceae	2	1	2	1	50
Fern Families	38	1	97	1	1.031
Rutaceae	4	1	5	1	20
Sapindaceae	8	1	11	1	9.091
Solananceae	9	1	25	6	24
Verbenaceae	9	1	12	1	8.333
Zingiberaceae	2	1	4	1	25

Table 106: Predicted and residual number of species used to treat malaria.

Family	Predicted no. of species used	Residual no. of species used
Annonaceae	1.745972	-0.74597
Apiaceae	1.560087	-0.56009
Apocynaceae	1.838914	6.161086
Arecaceae	1.792443	-0.79244
Asteraceae	2.015505	0.984495
Caricaceae	1.550793	-0.55079
Caryophyllaceae	1.550793	-0.55079
Cecropiaceae	1.58797	-0.58797
Cyperaceae	2.219978	-1.21998
Euphorbiaceae	1.922562	-0.92256
Fabaceae	1.941151	-0.94115
Loranthaceae	1.653029	-0.65303
Malpighiaceae	1.773855	1.226145
Meliaceae	1.606558	-0.60656
Monimiaceae	1.560087	-0.56009
Fern Families	2.44304	-1.44304
Rutaceae	1.58797	-0.58797
Sapindaceae	1.643735	-0.64374
Solanaceae	1.773855	4.226145
Verbenaceae	1.653029	-0.65303
Zingiberaceae	1.578675	-0.57868

Table 107: Number and percent taxa in families used to treat measles.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Apiaceae	2	1	2	1	50
Arecaceae	13	1	27	1	3.7
Asteraceae	27	3	51	3	5.88
Chrysobalanaceae	4	1	21	1	4.76
Gentianaceae	8	1	14	2	14.29
Icacinaceae	2	1	4	1	25
Malvaceae	4	2	5	2	40
Meliaceae	3	2	7	2	28.59
Mimosaceae	9	1	37	1	2.7
Pteridophyta	38	2	97	2	2.06
Sapindaceae	8	1	11	1	9.09
Tiliaceae	5	1	6	1	16.67
Ulmaceae	2	1	3	1	33.33
Verbenaceae	9	3	12	3	25

Table 108: Regression analysis and Parameter estimates of used to treat measles.
P = 0.2318, not significant; RSquare = 0.107974; N = 15.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.3385219	0.243914	5.49	0.0001
No. of species in family	0.0096124	0.007663	1.25	0.2318

Table 109: Predicted and residual number of species used to treat measles.

Species of Asteraceae, Gentianaceae, Malvaceae, Meliaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.405809	-0.40581
Apiaceae	1.357747	-0.35775
Arecaceae	1.598057	-0.59806
Asteraceae	1.828755	1.171245
Chrysobalanaceae	1.540382	-0.54038
Gentianaceae	1.473096	0.526904
Icacinaceae	1.376972	-0.37697
Malvaceae	1.386584	0.613416
Meliaceae	1.405809	0.594191
Mimosaceae	1.694181	-0.69418
Pteridophyta	2.270925	-0.27093
Sapindaceae	1.444258	-0.44426
Tiliaceae	1.396196	-0.39620
Ulmaceae	1.367359	0.36736
Verbenaceae	1.453871	1.546129

Table 110: Number and percent taxa in families used to treat muscular aches and pains.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	1	4.55
Asteraceae	27	1	51	1	1.96
Burseraceae	5	1	8	1	12.5
Euphorbiaceae	25	1	41	1	2.43
Iridaceae	3	1	3	1	33.33
Melastomataceae	28	1	111	1	0.9
Piperaceae	3	1	22	6	27.27
Portulacaceae	1	1	1	1	100
Rubiaceae	40	1	135	1	0.74
Verbenaceae	9	1	12	1	8.33

Table 111: Regression analysis and Parameter estimates of plants used to treat muscular aches and pains.

P = 0.7392; not significant; RSquare = 0.012931; N = 11.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.596509	0.630498	2.53	0.0321
No. of species in family	-0.003781	0.011012	-0.34	0.7392

Table 112: Predicted and residual number of species used to treat muscular aches and pains.

Species of Piperaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.570041	-0.57004
Annonaceae	1.513325	-0.51332
Asteraceae	1.403672	-0.40367
Burseraceae	1.56626	-0.56626
Euphorbiaceae	1.441483	-0.44148
Iridaceae	1.585166	-0.58517
Melastomataceae	1.176806	-0.17681
Piperaceae	1.513325	4.486675
Portulacaceae	1.592728	-0.59273
Rubiaceae	1.086059	-0.08606
Verbenaceae	1.551136	-0.55114

Table 113: Number and percent taxa in families used as a purgative.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Bignoniaceae	12	1	19	1	5.26
Lycopodiaceae	2	1	3	1	33.33

Table 114: Regression analysis and Parameter estimates of plants used to treat ringworm. $P = 0.9073$ and is not significant; $RSquare = 0.003827$; $N = 6$.

Term	Estimate	Std Error	Ratio	Prob> t
Intercept	1.3738485	0.495143	2.77	0.0501
No. of species in family	-0.001034	0.008344	-0.12	0.9073

Table 115: Predicted and residual number of species used to treat ringworm.
Species of the Clusiaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.360401	-0.36040
Araliaceae	1.37178	-0.37178
Clusiaceae	1.339712	1.660288
Gentianaceae	1.359366	-0.35937
Myrtaceae	1.33454	-0.33454
Rubiaceae	1.2342	-0.23420

Table 116: Number and percent taxa in families used as shampoo.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Agavaceae	1	1	1	1	100
Alzateaceae	1	1	1	1	100
Anacardiaceae	6	1	7	1	14.29
Clusiaceae	9	1	33	2	6.06
Crassulaceae	1	1	1	1	100
Mimosaceae	9	1	37	1	2.7
Poaceae	38	1	100	1	1
Verbenaceae	9	1	12	1	8.5

Table 117: Regression analysis and Parameter estimates of plants used as shampoo.
P = 0.8004, not significant; RSquare = 0.011505; N = 8.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.0981544	0.168343	6.52	0.0006
No. of species in family	0.0011186	0.004233	0.26	0.8004

Table 118: Predicted and residual number of species used as shampoo.

Family	Predicted no. of species used	Residual no. of species used
Agavaceae	1.099273	-0.09927
Alzateaceae	1.099273	-0.09927
Anacardiaceae	1.105984	-0.10598
Clusiaceae	1.135067	0.864933
Crassulaceae	1.099273	-0.09927
Mimosaceae	1.139541	-0.13954
Poaceae	1.210011	-0.21001
Verbenaceae	1.111577	-0.11158

Table 119: Number and percent taxa in families used to treat skin conditions.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Asteraceae	27	1	51	1	1.96
Bixaceae	1	1	1	1	100
Menispermaceae	4	1	6	1	16.67
Moraceae	4	1	8	1	12.5

Table 120: Number and percent taxa in families used as skin irritants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Araceae	10	1	33	1	3.03
Euphorbiaceae	25	2	41	3	7.31
Fabaceae	26	1	43	1	2.33
Lauraceae	7	1	16	1	6.25

Table 121: Regression analysis and Parameter estimates of plants that cause skin irritation.

P = 0.5794, not significant; RSquare = 0.176882; N = 4.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	0.6808393	0.911538	0.75	0.5330
No. of species in family	0.0171176	0.026111	0.66	0.5794

Table 122: Predicted and residual number of species used as skin irritants. Species of the Euphorbiaceae and Lauraceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Araceae	1.245721	-0.24572
Euphorbiaceae	1.382662	0.617338
Fabaceae	1.416897	-0.41690
Lauraceae	0.954721	0.045279

Table 123: Number and percent taxa in families used to treat snakebite.

Family	No. of genera in family	No. of genera used	No. species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	1	4.55
Caesalpiniaceae	18	1	56	2	3.57
Cyperaceae	19	1	73	1	1.37
Gesneriaceae	14	1	20	1	5
Piperaceae	3	1	22	2	9.09
Rutaceae	4	1	5	1	20
Vochysiaceae	3	1	4	1	25

Table 124: Regression analysis and Parameter estimates of plants used to treat snakebite.

P = 0.4477; not significant; Rsquare = 0.099049; N = 8.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.0992634	0.250201	4.39	0.0046
No. of species in family	0.0057698	0.007104	0.81	0.4477

Table 125 : Predicted and residual number of species used to treat snakebite.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.139652	-0.13965
Annonaceae	1.226199	-0.22620
Caesalpinaceae	1.422373	0.577627
Cyperaceae	1.52046	-0.52046
Gesneriaceae	1.21466	-0.21466
Piperaceae	1.226199	0.773801
Rutaceae	1.128112	-0.12811
Vochysiaceae	1.122343	-0.12234

Table 126: Number and percent taxa in families used as soap.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Agavaceae	1	1	1	1	100
Amaranthaceae	3	1	3	1	33.33
Mimosaceae	9	1	37	1	2.70

Table 127: Number and percent taxa in families used to treat sores.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Acanthaceae	8	1	13	1	7.69
Anacardiaceae	6	1	7	1	14.29
Apocynaceae	16	3	32	3	9.38
Araliaceae	2	1	2	1	50
Asteraceae	27	1	51	1	1.96
Burseraceae	5	1	9	1	9.09
Caesalpiniaceae	18	1	56	1	1.79
Cannaceae	1	1	1	1	100
Chrysobalanaceae	4	1	21	1	4.76
Clusiaceae	9	2	33	3	9.09
Crassulaceae	1	1	1	1	100
Euphorbiaceae	25	3	41	3	7.32
Gentianaceae	8	1	14	1	7.14
Loranthaceae	7	2	12	2	16.67
Meliaceae	3	2	7	2	28.57
Mimosaceae	9	1	37	1	2.7
Moraceae	4	1	8	1	12.5
Myrtaceae	10	1	38	1	2.63
Piperaceae	3	1	22	1	4.55
Pteridophyta	38	2	97	1	1.03
Rubiaceae	40	3	135	3	2.22
Rutaceae	4	1	5	1	20
Sapotaceae	8	2	13	2	15.39
Solanaceae	9	1	25	1	4
Theaceae	2	1	4	1	25
Tiliaceae	5	1	6	1	16.67
Verbenaceae	9	2	12	2	16.67
Zingiberaceae	2	1	4	1	25

Table 128: Predicted and residual number of taxa used to treat sores.
Species of Apocynaceae, Clusiaceae, Euphorbiaceae, Loranthaceae, Meliaceae, Rubiaceae, Sapotaceae and Verbenaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Acanthaceae	1.318931	-0.31893
Anacardiaceae	1.265073	-0.26507
Apocynaceae	1.489483	1.510517
Araliaceae	1.220191	-0.22019
Asteraceae	1.660034	-0.66003
Burseraceae	1.283026	-0.28303
Caesalpiniaceae	1.704916	-0.70492
Cannaceae	1.211215	-0.21121
Chrysobalanaceae	1.390742	-0.39074
Clusiaceae	1.498459	1.501541
Crassulaceae	1.211215	-0.21121
Euphorbiaceae	1.57027	1.42973
Gentianaceae	1.327908	-0.32791
Loranthaceae	1.309955	0.690045
Meliaceae	1.265073	0.734927
Mimosaceae	1.534365	-0.53436
Moraceae	1.274049	-0.27405
Myrtaceae	1.543341	-0.54334
Piperaceae	1.399719	-0.39972
Pteridophyta	2.072947	-1.07295
Rubiaceae	2.41405	0.58595
Rutaceae	1.24712	-0.24712
Sapotaceae	1.318931	0.681069
Solanaceae	1.426648	-0.42665
Theaceae	1.238144	-0.23814
Tiliaceae	1.256097	-0.25610
Verbenaceae	1.309955	0.690045
Zingiberaceae	1.238144	-0.23814

Table 129: Number and percent taxa in families used to treat sprains.

Family	No. of genera in family	No. of genera used	No. of species in family	No. species used	Percent species used
Amaryllidaceae	4	1	5	1	20
Piperaceae	3	1	22	1	4.55
Rubiaceae	40	1	135	1	0.74

Table 130: Number and percent taxa in families used to treat syphilis.

Family	No. of genera in family	No. of genera used	No. of species in family	No. species used	Percent species used
Clusiaceae	9	1	33	1	3.03
Fabaceae	26	1	43	1	2.33

Table 131: Regression analysis and Parameter estimates of plants used to treat teeth infections.

P = 0.9754, not significant; RSquare = 0.000372; N = 5.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.2095964	0.368527	3.28	0.0463
No. of species in family	-0.000372	0.011133	-0.03	0.9754

Table 132: Predicted and residual number of species used to treat teeth infections.

Family	Predicted no. of species used	Residual no. of species used
Caesalpinaceae	1.188767	-0.18877
Euphorbiaceae	1.194346	-0.19435
Papaveraceae	1.209224	-0.20922
Solanaceae	1.200298	0.799702
Tiliaceae	1.207365	-0.20736

Table 133: Number and percent taxa in families used for making tonics.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Anacardiaceae	6	1	7	1	14.29
Annonaceae	10	1	22	1	4.55
Apocynaceae	16	1	32	1	3.12
Arecaceae	13	1	27	2	7.41
Ascomycetes	1	1	2	1	50
Boraginaceae	3	1	8	1	12.5
Bromeliaceae	16	1	36	1	2.78
Caesalpinaceae	18	1	56	1	1.79
Cecropiaceae	3	1	5	2	40
Chenopodiaceae	1	1	1	1	100
Commelinaceae	5	1	6	1	16.67
Cucurbitaceae	4	1	8	1	12.5
Dilleniaceae	5	3	9	5	55.55
Gentianaceae	8	1	14	1	7.14
Hippocrateaceae	5	1	7	1	14.29
Lauraceae	7	1	16	1	6.25
Malpighiaceae	7	1	25	1	4
Melastomataceae	28	1	111	1	0.9
Myrtaceae	10	1	38	2	5.26
Passifloraceae	1	1	10	2	20
Poaceae	38	1	100	1	1
Rutaceae	4	1	5	1	20
Scrophulariaceae	6	1	6	1	16.67
Smilacaceae	1	1	4	2	50
Zingiberaceae	2	1	4	1	25

Table 134: Regression analysis and Parameter estimates of plants used for making tonics.
P = 0.5113, not significant; RSquare = 0.018982; N = 25.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.4527852	0.222813	6.52	0.0000
No. of species in family	-0.004150	0.006220	-0.67	0.5113

Table 135: Predicted and residual number of species used for making tonics.
Species of the Arecaceae, Cecropiaceae, Dilleniaceae, Melastomataceae, Myrtaceae and Smilacaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Anacardiaceae	1.423738	-0.42374
Annonaceae	1.361494	-0.36149
Apocynaceae	1.319998	-0.32000
Arecaceae	1.340746	0.659254
Ascomycetes	1.444486	-0.44449
Boraginaceae	1.419588	-0.41959
Bromeliaceae	1.303399	-0.30340
Caesalpiniaceae	1.220407	-0.22041
Cecropiaceae	1.432037	0.567963
Chenopodiaceae	1.448636	-0.44864
Commelinaceae	1.427888	-0.42789
Cucurbitaceae	1.419588	-0.41959
Dilleniaceae	1.415439	3.584561
Gentianaceae	1.394691	-0.39469
Hippocrateaceae	1.423738	-0.42374
Lauraceae	1.386391	-0.38639
Malpighiaceae	1.349045	-0.34905
Melastomataceae	0.992179	0.007821
Myrtaceae	1.2951	0.704900
Passifloraceae	1.411289	0.588711
Poaceae	1.037825	-0.03782
Rutaceae	1.432037	-0.43204
Scrophulariaceae	1.427888	-0.42789
Smilacaceae	1.436187	0.563813
Zingiberaceae	1.436187	-0.43619

Table 136: Number and percent taxa in families used as toxic (harmful / poisonous) plants.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Bombacaceae	5	1	10	1	10
Elaeocarpaceae	1	1	3	1	33
Euphorbiaceae	25	2	41	2	4.88
Fabaceae	26	2	43	2	4.65
Loganiaceae	2	1	4	1	25
Menispermaceae	4	1	6	1	16.67
Pteridophyta	38	1	97	1	1.03

Table 137: Regression analysis and Parameter estimates of toxic (harmful / poisonous) plants.

P = 0.5820, not significant.; RSquare = 0.064691; N = 7.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.180976	0.264381	4.47	0.0066
No. of species in family	0.0035940	0.006111	0.59	0.5820

Table 138: Predicted and residual number of species used as toxic (poison / harmful) plants.

Species of the Euphorbiaceae and Fabaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Bombacaceae	1.216916	-0.21692
Elaeocarpaceae	1.191758	-0.19176
Euphorbiaceae	1.328328	0.671672
Fabaceae	1.335516	0.664484
Loganiaceae	1.195352	-0.19535
Menispermaceae	1.20254	-0.20254
Pteridophyta	1.52959	-0.52959

Table 139: Number and percent taxa in families used to treat tuberculosis.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Chrysobalanaceae	4	1	21	2	9.52
Commelinaceae	5	2	6	2	33.33
Lamiaceae	4	1	8	1	12.5
Loranthaceae	7	1	12	1	8.33
Poaceae	38	1	100	1	1
Pteridophyta	38	1	97	1	1.03
Verbenaceae	9	1	12	1	8.33

Table 140: Regression analysis and Parameter estimates of plants used to treat tuberculosis.

P = 0.4137; not significant; Rsquare = 0.137041; N = 7.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.4408774	0.256016	5.63	0.0025
No. of species in family	-0.004243	0.004761	-0.89	0.4137

Table 141: Predicted and residual number of species used to treat tuberculosis.

Family	Predicted no. of species used	Residual no. of species used
Chrysobalanaceae	1.35178	0.648220
Commelinaceae	1.415421	0.584579
Lamiaceae	1.406936	-0.40694
Loranthaceae	1.389965	-0.38996
Poaceae	1.016603	-0.01660
Pteridophyta	1.029331	-0.02933
Verbenaceae	1.389965	-0.38996

Table 142: Number and percent taxa in families used to treat ulcers.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Burseraceae	5	3	9	3	33.33
Dilleniaceae	5	1	9	1	11.11
Mimosaceae	9	1	37	1	2.7

Table 143: Regression analysis and Parameter estimates of plants used to treat ulcers.
P = 0.6667; not significant; Rsquare = 0.25; N = 3.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.6607143	0.698714	2.38	0.2535
No. of species in family	-0.017857	0.030929	-0.58	0.6667

Table 144: Predicted and residual number of species used to treat ulcers.

Family	Predicted no. of species used	Residual no. of species used
Burseraceae	2.0	1.0
Dilleniaceae	2.0	-1.0
Mimosaceae	1.0	-0.022

Table 145: Number and percent taxa in families used to treat urinary bladder infections.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used	Percent species used
Asteraceae	27	1	51	1	1.96
Cannaceae	1	1	1	1	100
Caryophyllaceae	1	1	2	1	50

Table 146: Number and percent taxa in families used to treat whooping cough.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species in family	Percent species used
Apiaceae	2	1	2	1	50
Arecaceae	13	1	27	1	3.7
Loranthaceae	7	2	12	3	25
Moraceae	4	1	8	1	12.5
Pteridophyta	38	1	97	1	1.03
Verbenaceae	9	1	12	1	8.33

Table 147: Regression analysis and Parameter estimates of plants used to treat whooping cough.

P = 0.7079; not significant; RSquare = 0.038926; N = 6.

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	1.4525263	0.470291	3.09	0.0366
No. of species in family	-0.004526	0.011245	-0.40	0.7079

Table 148: Predicted and residual number of species used to treat whooping cough. Species of the Loranthaceae are more likely to be used.

Family	Predicted no. of species used	Residual no. of species used
Apiaceae	1.443474	-0.44347
Arecaceae	1.330316	-0.33032
Loranthaceae	1.398211	1.601789
Moraceae	1.416316	-0.41632
Pteridophyta	1.013474	-0.01347
Verbenaceae	1.398211	-0.39821

Appendix 2

Forest plots at the study sites

Table 149: Tree species in 250 m² forest plot at Kamana. The uses are a = medicinal, b = food, c = construction, d = fuel, e = other uses, and f = no use.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
1425	Annonaceae	<i>Annona montana</i>	1	tree	e	1
1413	Apocynaceae	<i>Aspidosperma excelsum</i>	1	tree	a	1
1447		<i>Aspidosperma ulei</i>	1	tree	a	1
1427	Bombacaceae	<i>Catostemma fragrans</i>	1	tree	e	1
1410, 1429	Burseraceae	<i>Dacryodes nitens</i>	2	tree	a, b, e	3
1434	Caesalpinaceae	<i>Swartzia sprucei</i>	1	tree	c	1
1404	Chrysobalanaceae	<i>Licania densiflora</i>	1	tree	a	1
1418		<i>Licania macrophylla</i>	1	tree	f	0
1426		<i>Licania</i> sp.	1	tree	d	1
1412	Clusiaceae	<i>Calophyllum brasiliense</i>	1	tree	b, c	2
1424		<i>Calophyllum</i> sp.	1	tree	c, d	2
1416		<i>Moronobea coccinea</i>	1	tree	a	1
1417		<i>Symphonia globulifera</i>	1	tree	a, d	2
1401		<i>Tovomita calodictyos</i>	1	tree	a, b	2
1421, 1441		<i>Tovomita schomburgkii</i>	2	tree	a, d, e	3
1431	Connaraceae	<i>Rourea glabra</i>	1	tree	d	1
1437	Elaeocarpaceae	<i>Sloanea guianensis</i>	1	tree	a, c	2
1403	Fabaceae	<i>Clathotropis macrocarpa</i>	1	tree	a	1
1400	Hippocrateaceae	<i>Prionostemma aspera</i>	1	liana	a, b	2

Table 149 continued: Tree species in 250 m² forest plot at Kamana.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
1419	Lauraceae	<i>Aniba ovalifolia</i>	1	tree	c	1
1406		<i>Endlicheria multiflora</i>	1	tree	a	1
1409		<i>Licaria canella</i>	1	tree	a, c	2
1402, 1415B	Loranthaceae	<i>Phoradendron piperoides</i>	2	parasitic vine	a	1
1430, 1432		<i>Trichilia pallida</i>	2	tree	a, d	2
1405	Moraceae	<i>Brosimum guianense</i>	1	tree	a, c	2
1414	Myrtaceae	<i>Eugenia</i> sp.	1	tree	a, d	2
1407		<i>Myrcia roraimae</i>	1	tree	e	1
1408	Olacaceae	cf. <i>Heisteria</i> sp.	1	tree	c	1
1435, 1436		<i>Minquartia</i> cf. <i>guianensis</i>	2	tree	d	1
1442	Proteaceae	<i>Panopsis</i> sp.	1	tree	f	0
1415A		<i>Roupala</i> sp.	1	tree	d	1
1439	Rubiaceae	<i>Coussarea</i> cf. <i>paniculata</i>	1	tree	a	1
1411, 1422	Sapotaceae	<i>Chrysophyllum</i> cf. <i>auratum</i>	2	tree	a	1
1440		<i>Ecclinusa guianensis</i>	1	tree	f	0
1423, 1443, 1446		<i>Eremoluna sagotiana</i>	3	tree	a, b, c, d	4
1438		<i>Micropholis guyanensis</i>	1	tree	b, d	2
1420, 1444, 1445		<i>Pradosia</i> sp.	3	tree	c	1
1433	Simaroubaceae	cf. <i>Picramnia</i> sp.	1	tree	d	1
1428	Unknown	unknown sp.	1	tree	b, c	2

Table 150: Tree species in 250 m² forest plot at Kato. The uses are a = medicinal, b = food, c = construction, d = fuel, e = other uses, and f = no use.

Voucher	Family	Species	No. of trees	Habit	Uses	Use value
1645, 1657, 1662, 1663, 1666, 1671	Anacardiaceae	<i>Tapirira guianensis</i>	6	tree	b, c, d	3
1652		<i>Anacardium giganteum</i>	1	tree	a, c, d	3
1658	Annonaceae	<i>Duguetia cauliflora</i>	1	tree	a, c	2
1672		<i>Rollinia excussa</i>	1	tree	f	0
1673	Apocynaceae	<i>Aspidosperma oblongum</i>	1	tree	a, e	2
1646	Bignoniaceae	<i>Tabebuia insignis</i>	1	tree	c	1
1653	Bombacaceae	<i>Bombax globosum</i>	1	tree	c, d	2
1648, 1650	Burseraceae	<i>Protium sagotianum</i>	2	tree	a, d, e	3
1642	Caesalpiniaceae	<i>Poeppigia procera</i>	1	tree	c	1
1654		<i>Mora gonggripii</i>	1	tree	c, d	2
1669		<i>Hymenaea courabril</i>	1	tree	a, b, c	3
1667	Capparidaceae	<i>Capparis cf. maroniensis</i>	1	tree	c, e	2
1651, 1677	Chrysobalanaceae	<i>Licania heteromorpha</i>	2	tree	a, c	2
1676		<i>Licania sp.</i>	1	tree	a, b, c	3
1664	Connaraceae	<i>Rourea glabra</i>	1	tree	c	1
1641, 1675	Elaeocarpaceae	<i>Sloanea guianensis</i>	2	tree	c, d	2
1644, 1668, 1674	Euphorbiaceae	<i>Mabea caudata</i>	3	tree	a, c, d	3
1655	Fabaceae	<i>Platymiscium sp.</i>	1	tree	c	1
1659	Goupiaceae	<i>Goupia glabra</i>	1	tree	c	1

Table 150 continued: Tree species in 250 m² forest plot at Kato.

Voucher	Family	Species	No. of trees	Habit	Uses	Use value
1649	Lauraceae	<i>Ocotea cf. schomburgkii</i>	1	tree	c, d	2
1661		<i>Licaria cf. canella</i>	1	tree	c	1
1643	Lecythidaceae	<i>Eschweilera cf. chartacea</i>	1	tree	c	1
1670	Loranthaceae	<i>Phoradendron piperoides</i>	1	parasitic vine	a	1
1660	Malpighiaceae	<i>Byrsonima crassifolia</i>	1	tree	a	1
1647	Meliaceae	<i>Trichilia micrantha</i>	1	tree	c, d	2
1656	Moraceae	<i>Brosimum alicastrum</i>	1	tree	a	1
1665	Rubiaceae	<i>Amaioua brevidentata</i>	1	tree	f	0

Table 151: Tree species in 250 m² forest plot at Kopinang. The uses are a = medicinal, b = food, c = construction, d = fuel, e = other uses, and f = no use.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
1884	Anacardiaceae	<i>Anacardium occidentale</i>	1	tree	a, c	2
1895		<i>Tapirira guianensis</i>	1	tree	b	1
1877	Annonaceae	<i>Duguetia pycnastera</i>	1	tree	a, c	2
1878, 1886	Apocynaceae	<i>Aspidosperma album</i>	3	tree	a, c	2
1890						
1880	Arecaceae	<i>Bactris hirta</i>	1	shrub	c	1
1881		<i>Dictyocaryum ptarianum</i>	1	tree	c	1
1882		<i>Euterpe oleracea</i>	1	tree	c	1
1883		<i>Socratea exorrhiza</i>	1	tree	c	1
1887	Bombacaceae	<i>Catostemma fragrans</i>	1	tree	b, c	2
1873	Caesalpiniaceae	<i>Eperua grandiflora</i>	1	tree	c	1
1885, 1891, 1900, 1902, 1903, 1996		<i>Swartzia laevicarpa</i>	6	tree	a, e	2
1889, 1892	Chrysobalanaceae	<i>Licania densiflora</i>	1	tree	a, c, d	3
1899		<i>Licania heteromorpha</i>	1	tree	a, c, d	3
1871, 1898	Clusiaceae	<i>Platonia insignis</i>	2	tree	a, c	2
1888, 1904		<i>Symphonia globulifera</i>	2	tree	a, e	2
1876	Lauraceae	<i>Ocotea oblongata</i>	1	tree	c	1
1893		<i>Licaria martiniana</i>	1	tree	c	1
1875, 1897	Lecythidaceae	<i>Eschweilera sagotiana</i>	2	tree	a, c	2
1874, 1905	Melastomataceae	<i>Loreya mespiloides</i>	2	tree	d	1
1872	Meliaceae	<i>Guarea gomma</i>	1	tree	a	1

Table 151 continued: Tree species in 250 m² forest plot at Kopinang.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
1879	Meliaceae	<i>Trichilia micrantha</i>	1	tree	a, e	2
1901	Moraceae	<i>Brosimum utile</i>	1	tree	a, b	2

Table 152: Tree species in 250 m² forest plot at Waipa. The uses are a = medicinal, b = food, c = construction, d = fuel, e = other uses, and f = no use.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
2003	Anacardiaceae	<i>Loxopterygium sagotii</i>	1	tree	f	0
1991, 1992	Annonaceae	<i>Annona hypoglauca</i>	2	tree	a, c	2
2012		<i>Fusaea longifolia</i>	1	tree	b, d	2
1998		<i>Oxandra</i> sp.	1	liana	a	1
1994	Apocynaceae	<i>Aspidosperma album</i>	1	tree	a	1
1997		<i>Aspidospermum excelsum</i>	1	tree	a	1
1988	Burseraceae	<i>Protium neglectum</i>	1	tree	b, d, e	3
2002, 2011		<i>Protium</i> cf. <i>sagotianum</i>	2	tree	a, d, e	3
1987, 2005		<i>Trattinickia burserifolia</i>	3	tree	a, b, d, e	4
2009						
1986	Clusiaceae	<i>Symphonia globulifera</i>	1	tree	c, d	2
2006	Elaeocarpaceae	<i>Sloanea</i> cf. <i>lutifolia</i>	1	tree	d	1
2010	Euphorbiaceae	<i>Mabea piriri</i>	1	tree	b	1
1989	Fabaceae	<i>Lecointea amazonica</i>	1	tree	b	1
1993		<i>Swartzia arborescens</i>	1	tree	d	1
2001		<i>Clathrotropis macrocarpa</i>	1	tree	a	1
1990, 1996, 1999	Melastomataceae	<i>Loreya mespiloides</i>	3	tree	a	1
2013		<i>Maieta guianensis</i>	1	tree	f	0
2000	Moraceae	<i>Brosimum</i> cf. <i>lactescens</i>	1	tree	a	1
1995	Olacaceae	<i>Minqartia guianensis</i>	1	tree	b	1
2004		<i>Dulacia guianensis</i>	1	tree	f	0
2007	Proteaceae	<i>Roupala schomburgkii</i>	1	tree	c	1

Table 152 continued: Tree species in 250 m² forest plot at Waipa.

Voucher	Family	Species	No. of trees	Habit	Use	Use value
2008	Sapotaceae	<i>Pouteria guianensis</i>	1	tree	b, d	2

Table 153: Use values of the families obtained at Kamana.

Family	Use value	Family	Use value
Annonaceae	1	Lauraceae	1.3
Apocynaceae	1	Loranthaceae	1
Bombacaceae	1	Meliaceae	2
Burseraceae	3	Moraceae	2
Caesalpiniaceae	1	Myrtaceae	1.5
Chrysobalanaceae	0.67	Olacaceae	1
Clusiaceae	2	Proteaceae	0.5
Connaraceae	1	Rubiaceae	1
Elaeocarpaceae	2	Sapotaceae	1.6
Fabaceae	1	Simaroubaceae	1
Hippocrateaceae	2	Unknown	2

Table 154 : Use values of the families obtained at Kato.

Family	Use value	Family	Use value
Anacardiaceae	3	Euphorbiaceae	3
Annonaceae	1	Fabaceae	1
Apocynaceae	2	Goupiaceae	1
Bignoniaceae	1	Lauraceae	1.5
Bombacaceae	2	Lecythidaceae	1
Burseraceae	3	Loranthaceae	1
Caesalpiniaceae	2	Malpighiaceae	1
Capparidaceae	2	Meliaceae	2
Chrysobalanaceae	2.5	Moraceae	1
Connaraceae	1	Rubiaceae	0
Elaeocarpaceae	2	.	.

Table 155: Use values of the families obtained at Kopinang.

Family	Use value	Family	Use value
Anacardiaceae	1.5	Clusiaceae	2
Annonaceae	2	Lauraceae	1
Apocynaceae	2	Lecythidaceae	2
Arecaceae	1	Melastomataceae	1
Bombacaceae	2	Meliaceae	1.5
Caesalpiniaceae	1.5	Moraceae	2
Chrysobalanaceae	3		

Table 156 : Use values of the families obtained at Waipa.

Family	Use value	Family	Use value
Anacardiaceae	0	Fabaceae	1
Annonaceae	1.67	Melastomataceae	0.5
Apocynaceae	1	Moraceae	1
Burseraceae	3.33	Olacaceae	0.5
Clusiaceae	2	Proteaceae	1
Elaeocarpaceae	1	Sapotaceae	2
Euphorbiaceae	1		

Appendix 3

Percent and line of best fit of Patamona medicinal plants

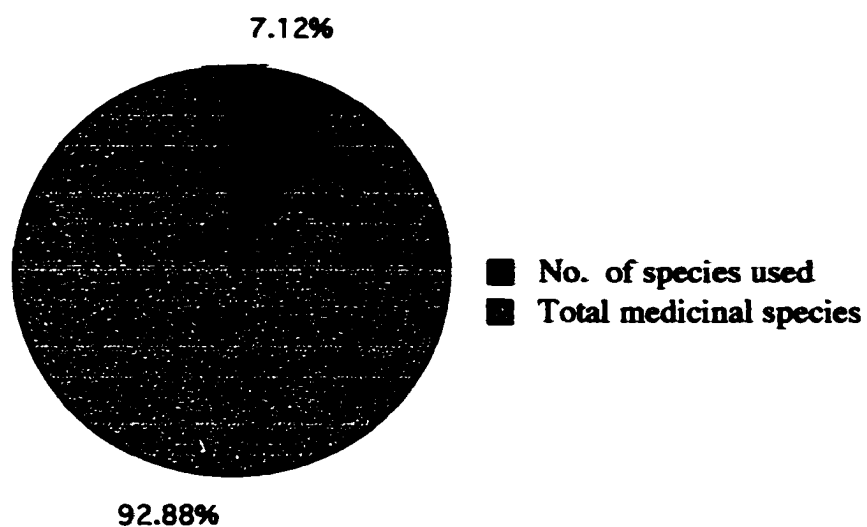


Figure 1: Pie chart showing percent medicinal species used as analgesic plants.

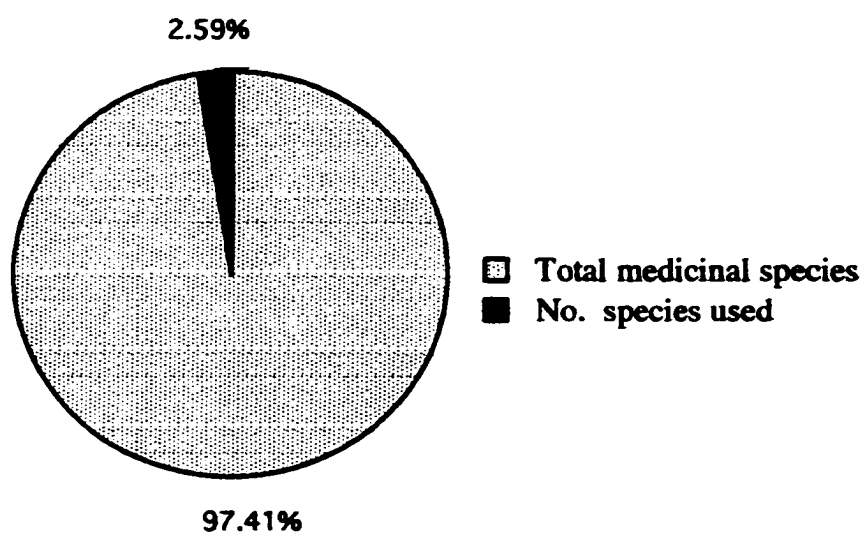


Figure 2: Pie chart showing percent medicinal species that are used for treating arthritic pain (anti-arthritic).

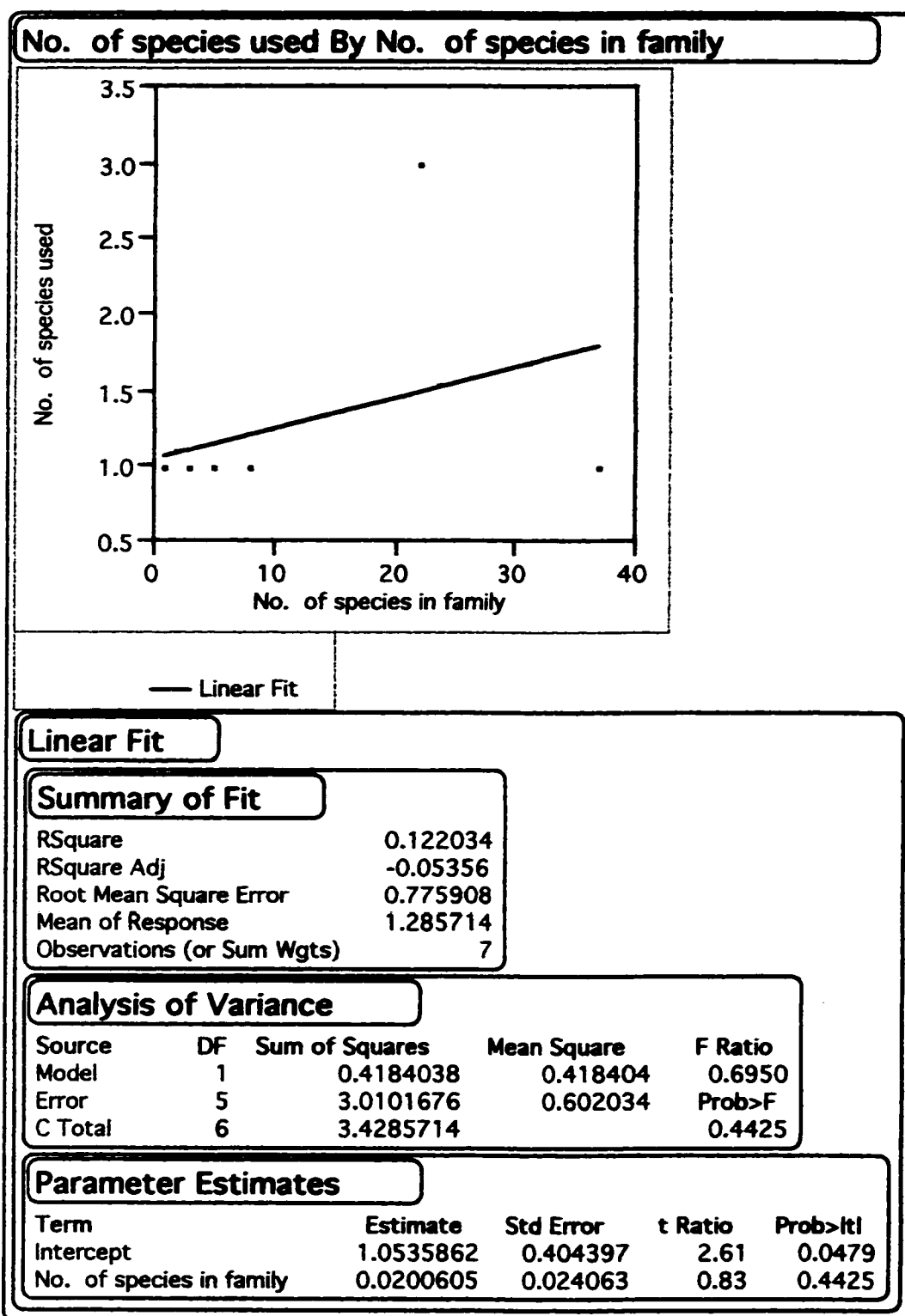


Figure 3: Line of best fit of plants that are used to treat arthritis.

P = 0.4425, not significant.

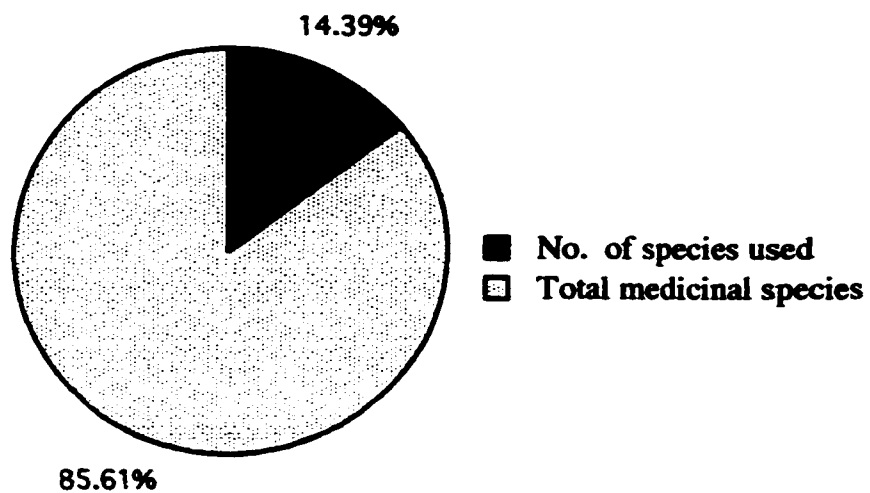


Figure 4: Pie chart showing percent medicinal species that are used for treating diarrhea.

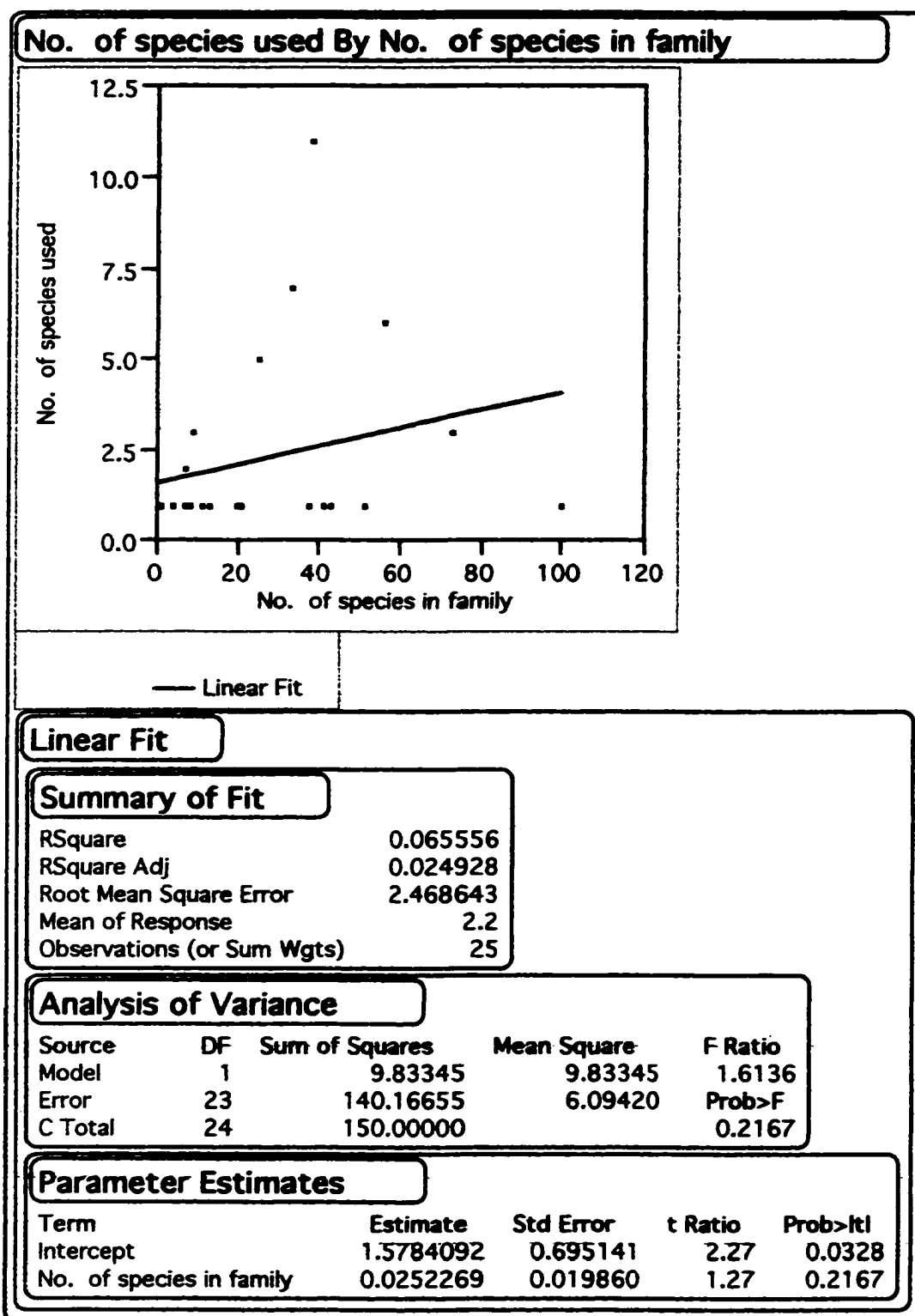


Figure 5: Graph showing the line of best fit of plants that are used as anti-diarrheal agents.

$P = 0.2167$; not significant.

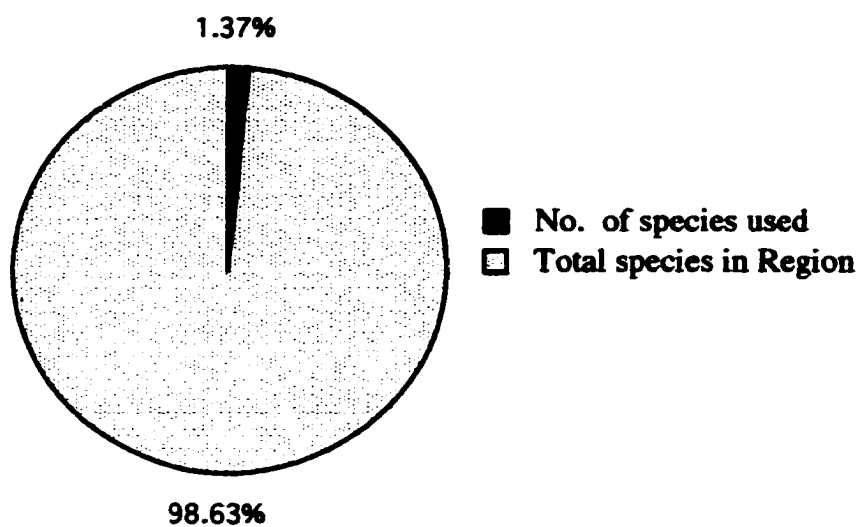


Figure 6: Pie chart showing percent flora of the Region that are used as anti-dysenteric plants.

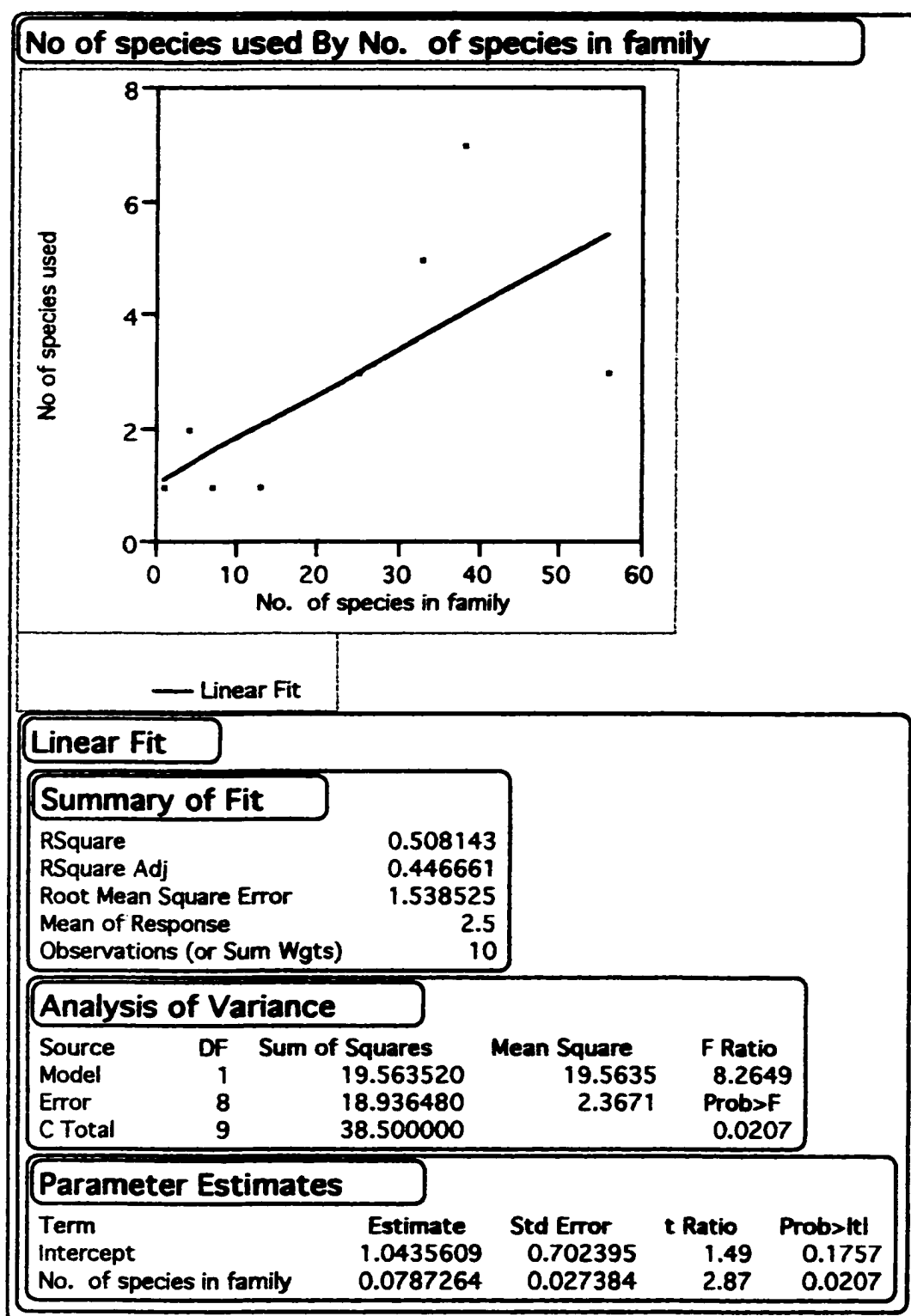


Figure 7: Line of best fit of plants that are used to treat dysentery.
 $P = 0.0207$, significant.

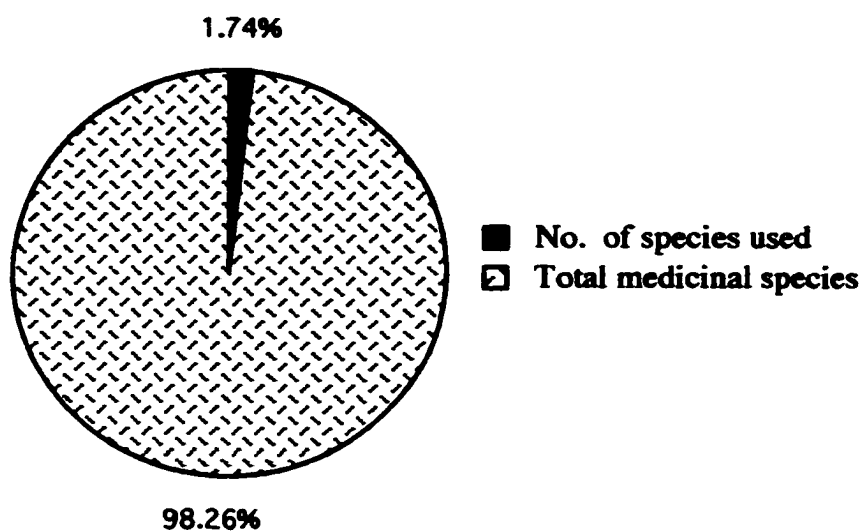


Figure 8: Pie chart showing the percent of medicinal species that are used as anti-helminthic plants.

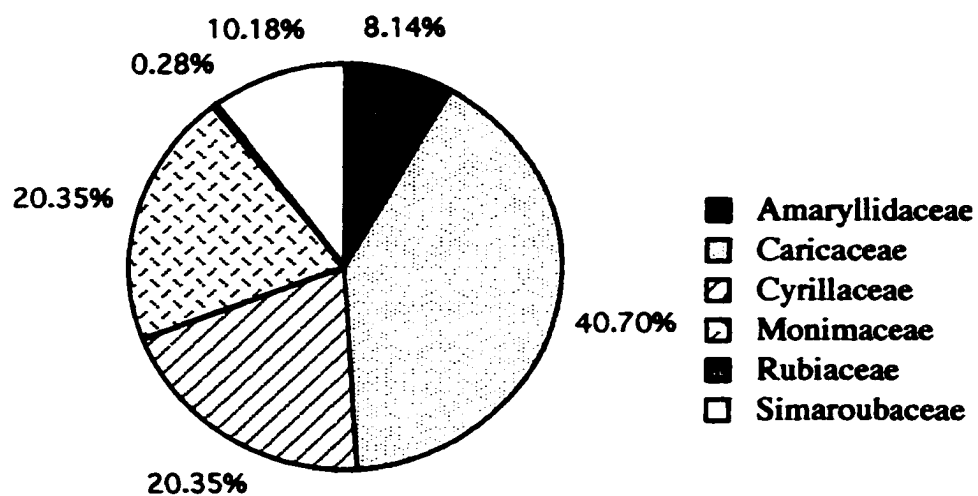


Figure 9: Pie chart showing percent families of the Region that are used for treating intestinal worm infections (anti-helminthic).

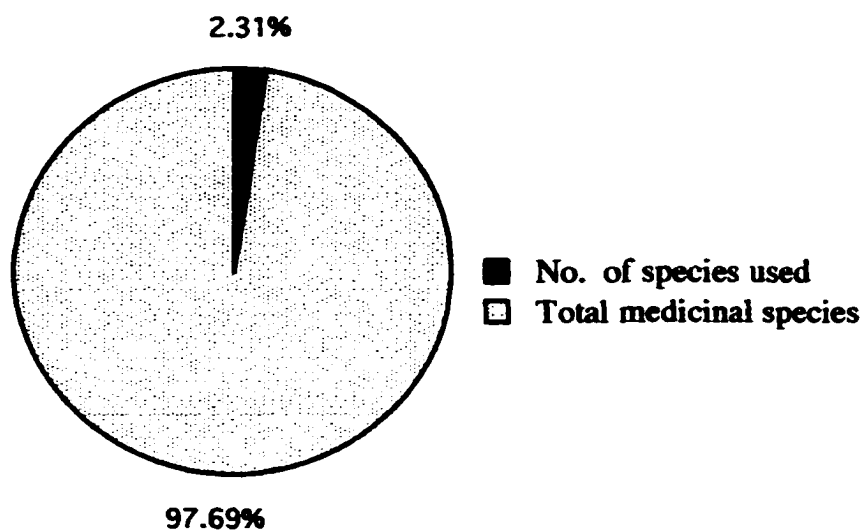


Figure 10: Pie chart showing percent medicinal species that are used to treat genital herpes (anti-herpetic).

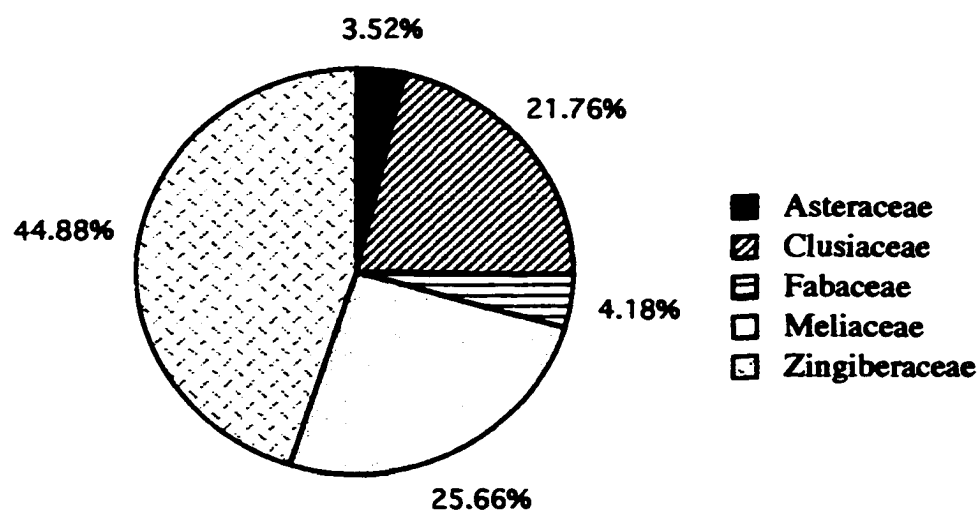


Figure 11: Pie chart showing percent families of the Region that are used to treat genital herpes.

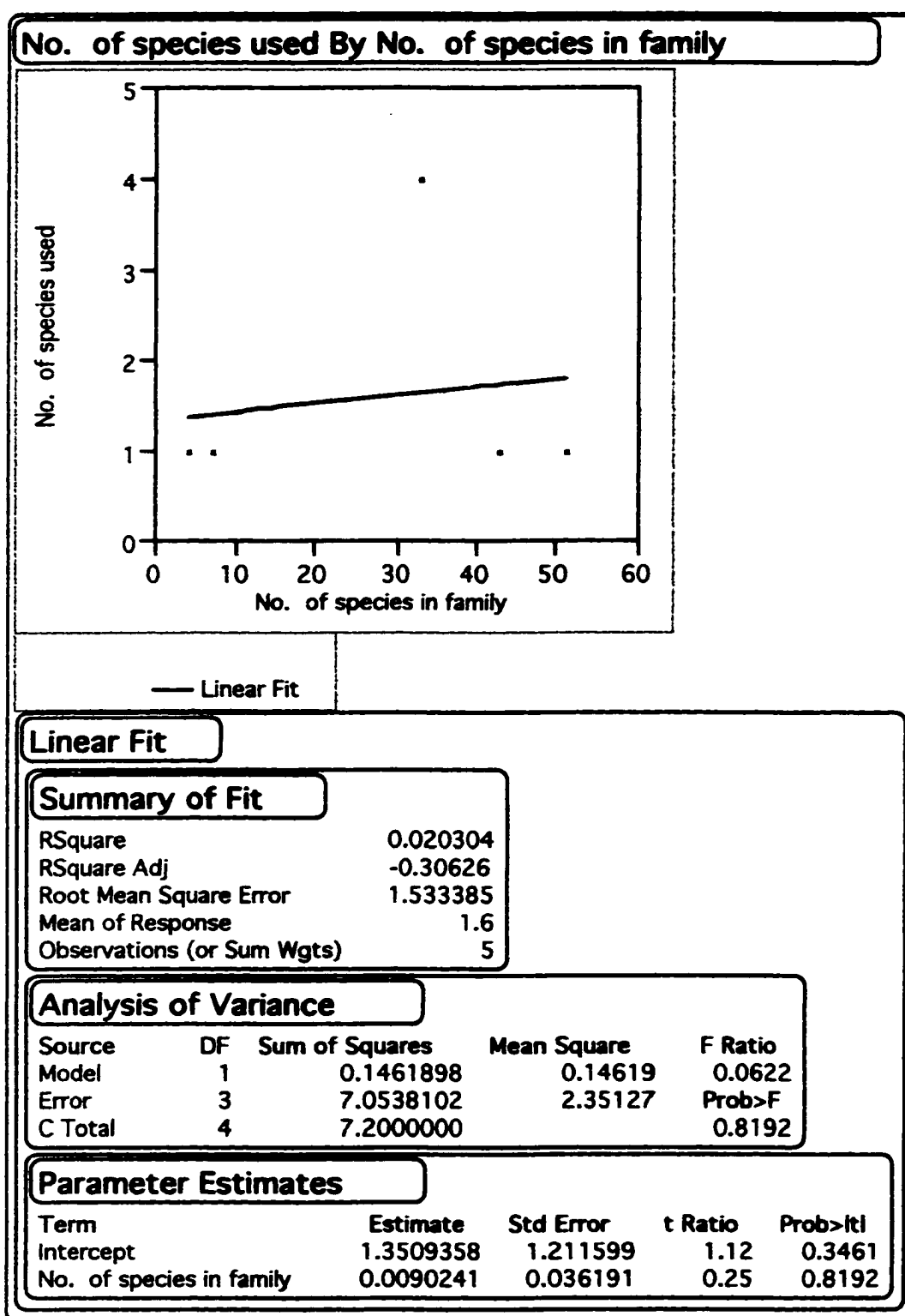


Figure 12: Line of best fit of plants that are used to treat genital herpes.

$P = 0.8192$, not significant.

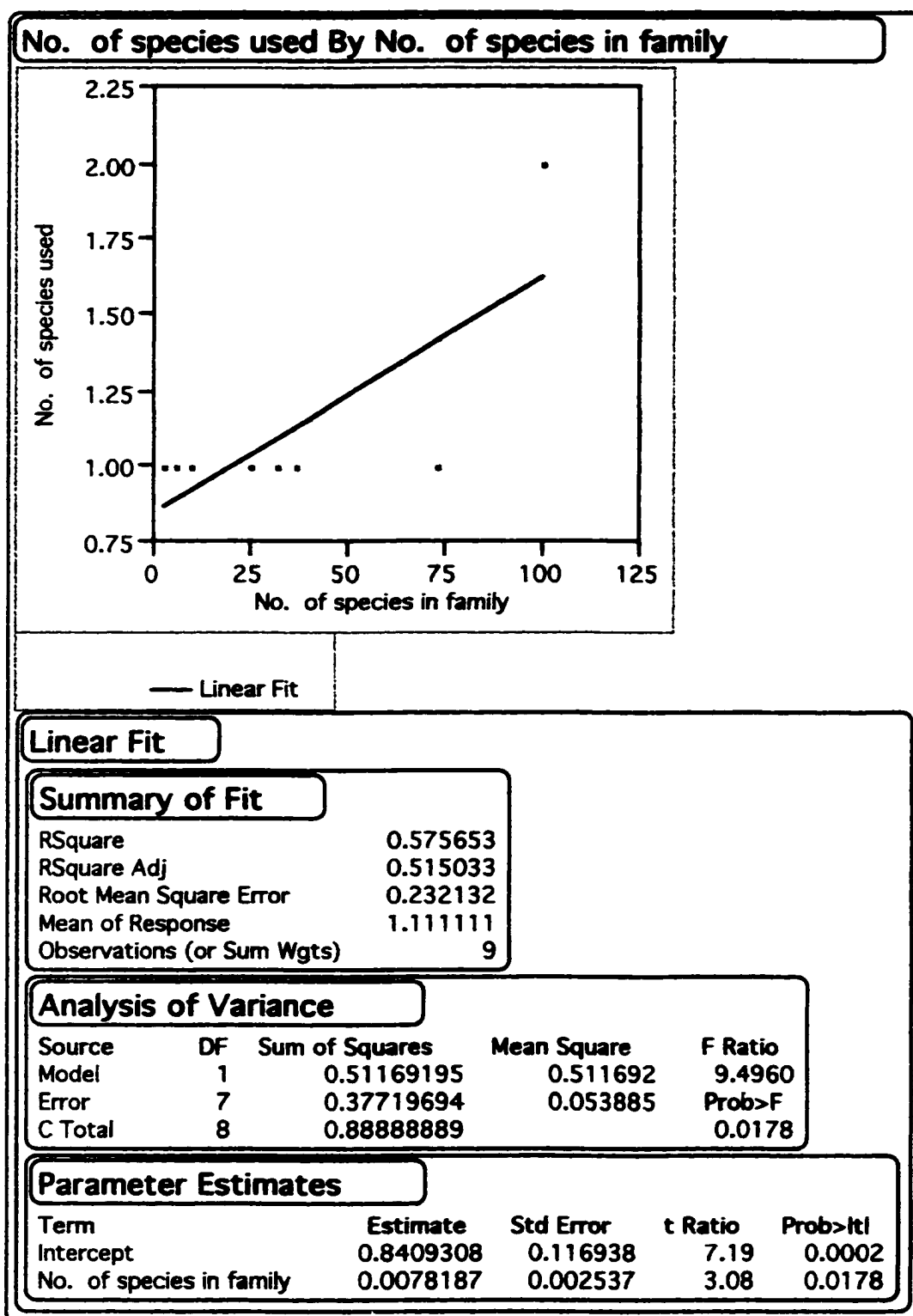


Figure 13: Line of best fit of plants that are used to treat inflammation (anti-inflammatory).

$P = 0.0178$, significant.

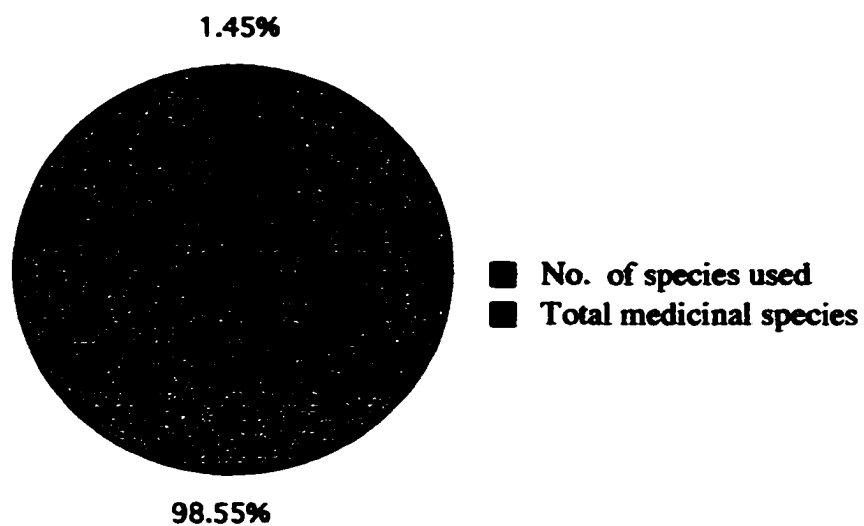


Figure 14: Pie chart showing the percent of medicinal flora that are used as anti-irritants.

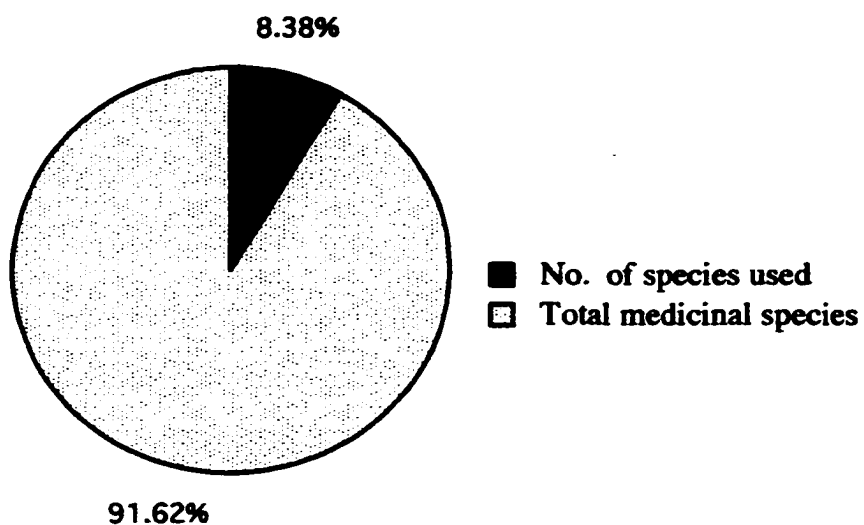


Figure 15: Pie chart showing percent medicinal species that are used as anti-pruritic (anti-itching) agents.

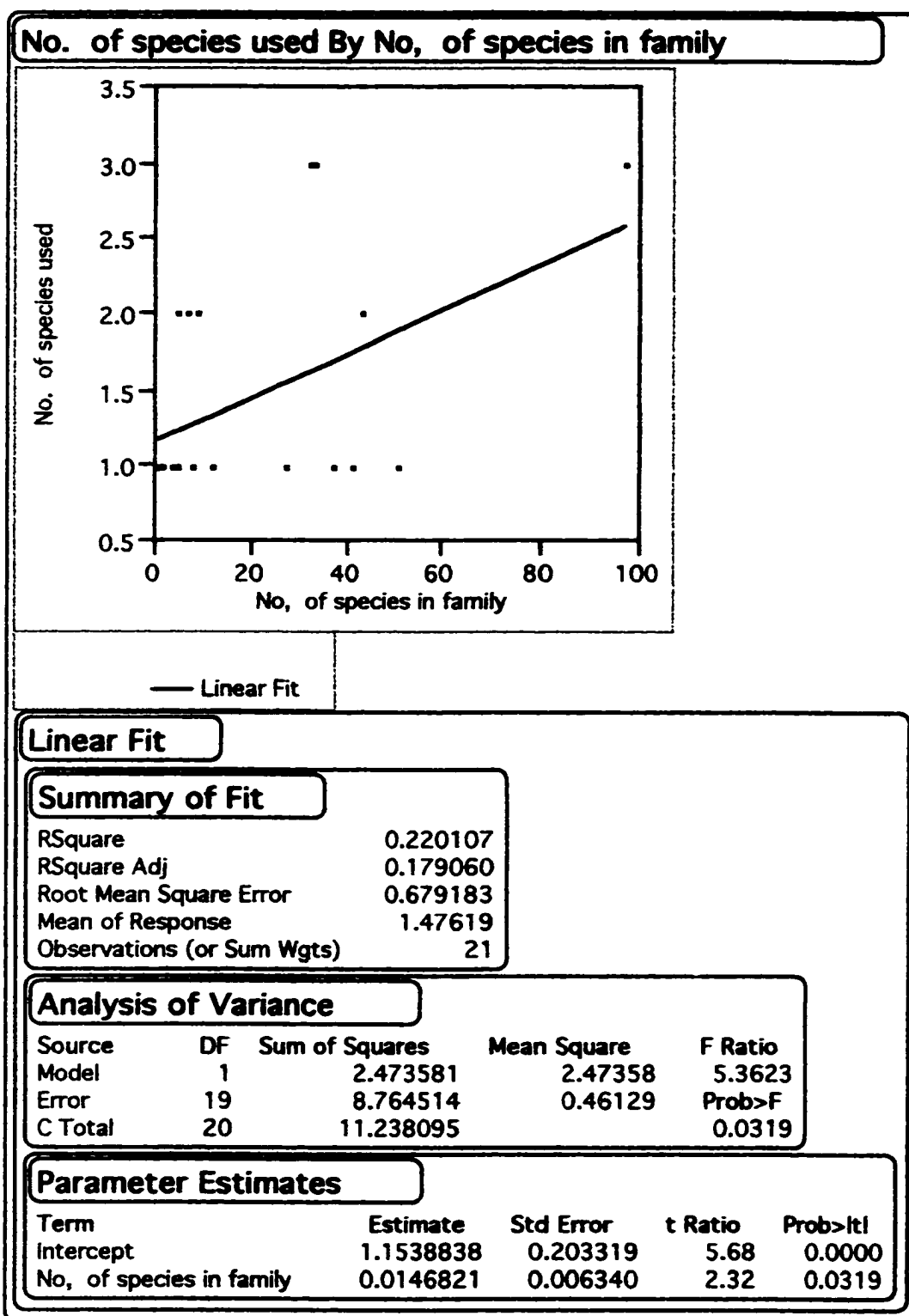


Figure 16: Line of best fit of plants that are used to treat itching (anti-pruritic).
 $P = 0.0319$; significant.

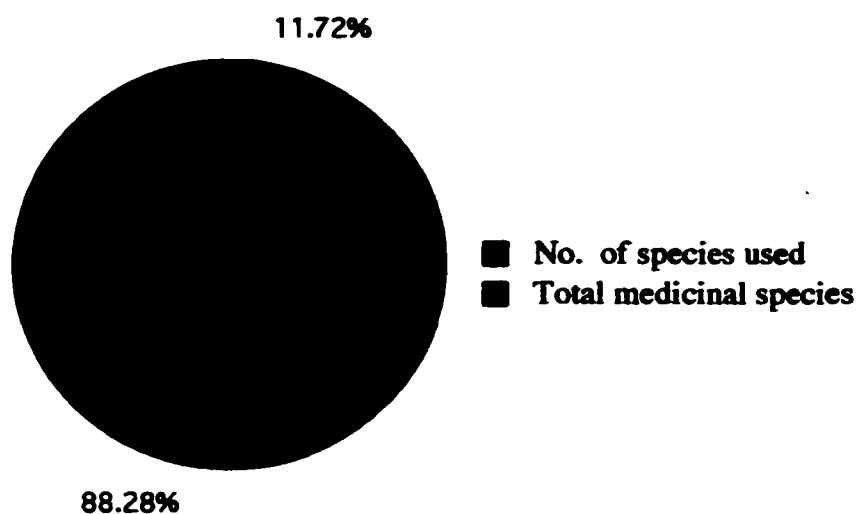


Figure 17: Pie chart showing percent medicinal species that are used as anti-pyretic agents.

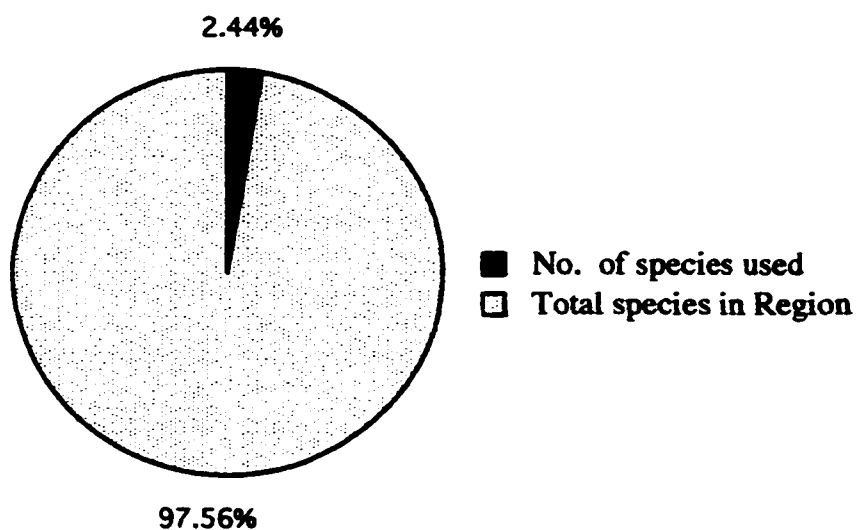


Figure 18: Pie chart showing percent flora of Region that are used as anti-pyretic plants.

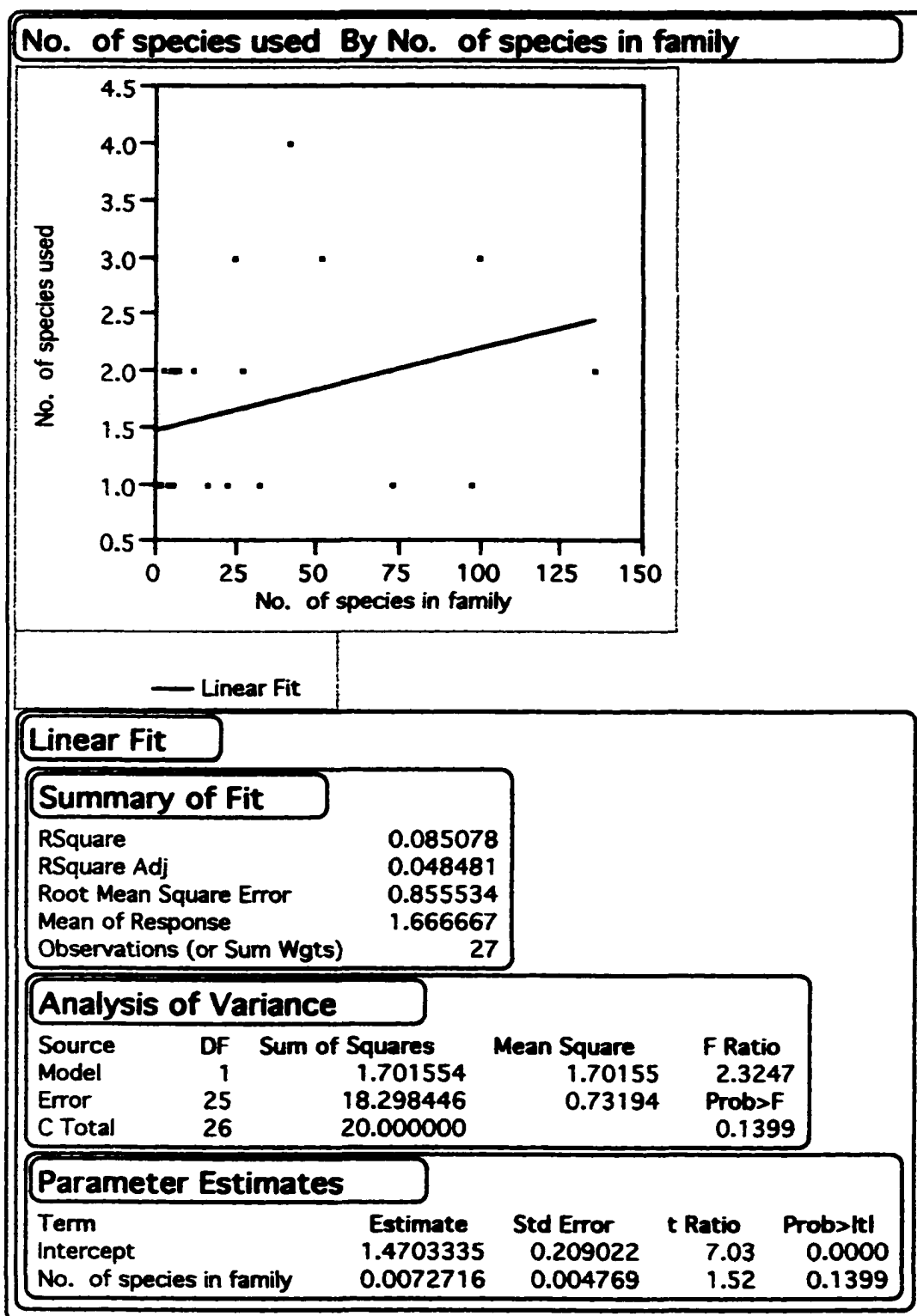


Figure 19: Line of best fit of plants that are used to treat fevers (anti-pyretic).
 $P = 0.1399$, not significant.

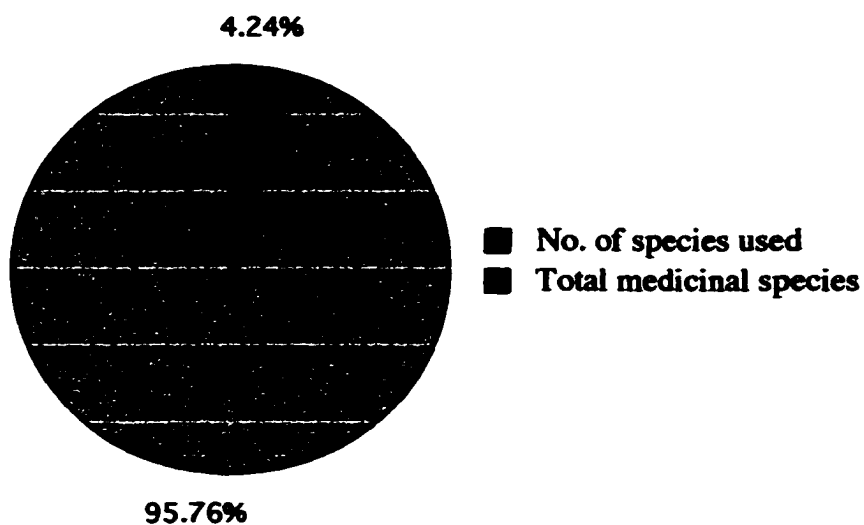


Figure 20: Pie chart showing percent medicinal species that are used for treating asthma (anti-asthmatic).

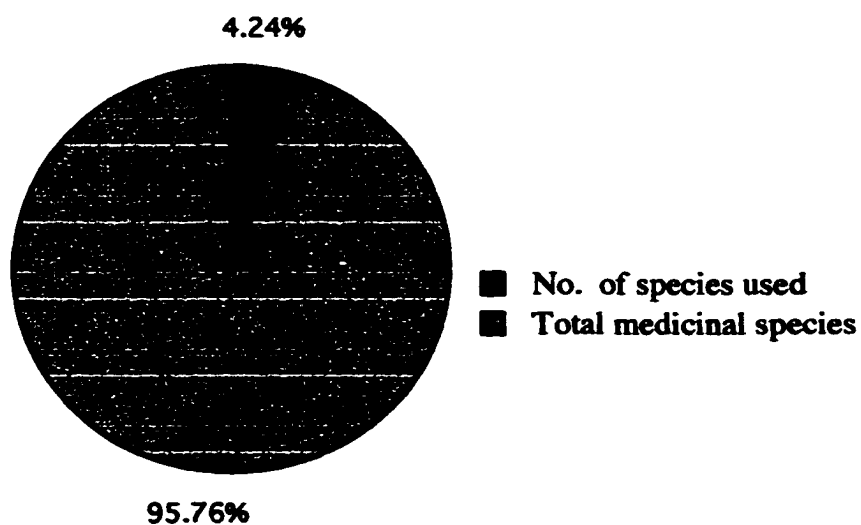


Figure 21: Pie chart showing percent medicinal species that are used for treating back pain.

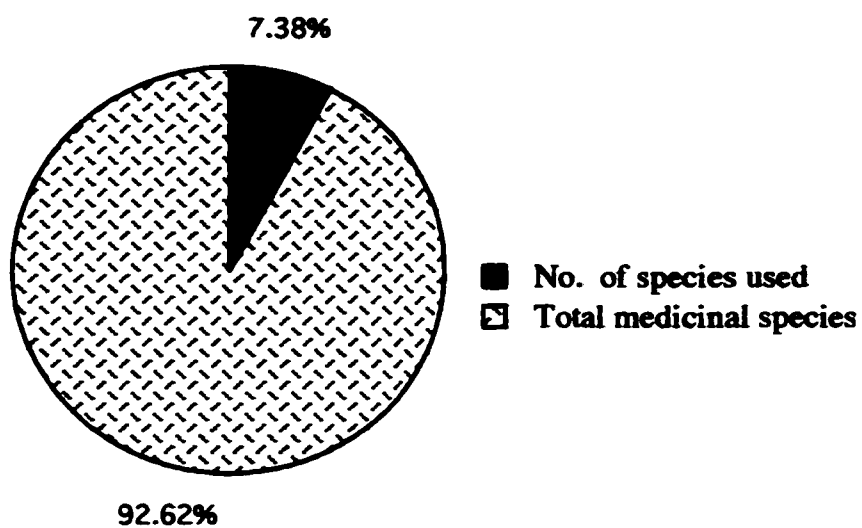


Figure 22: Pie chart showing percent medicinal species that are used for treating “bush yaws”.

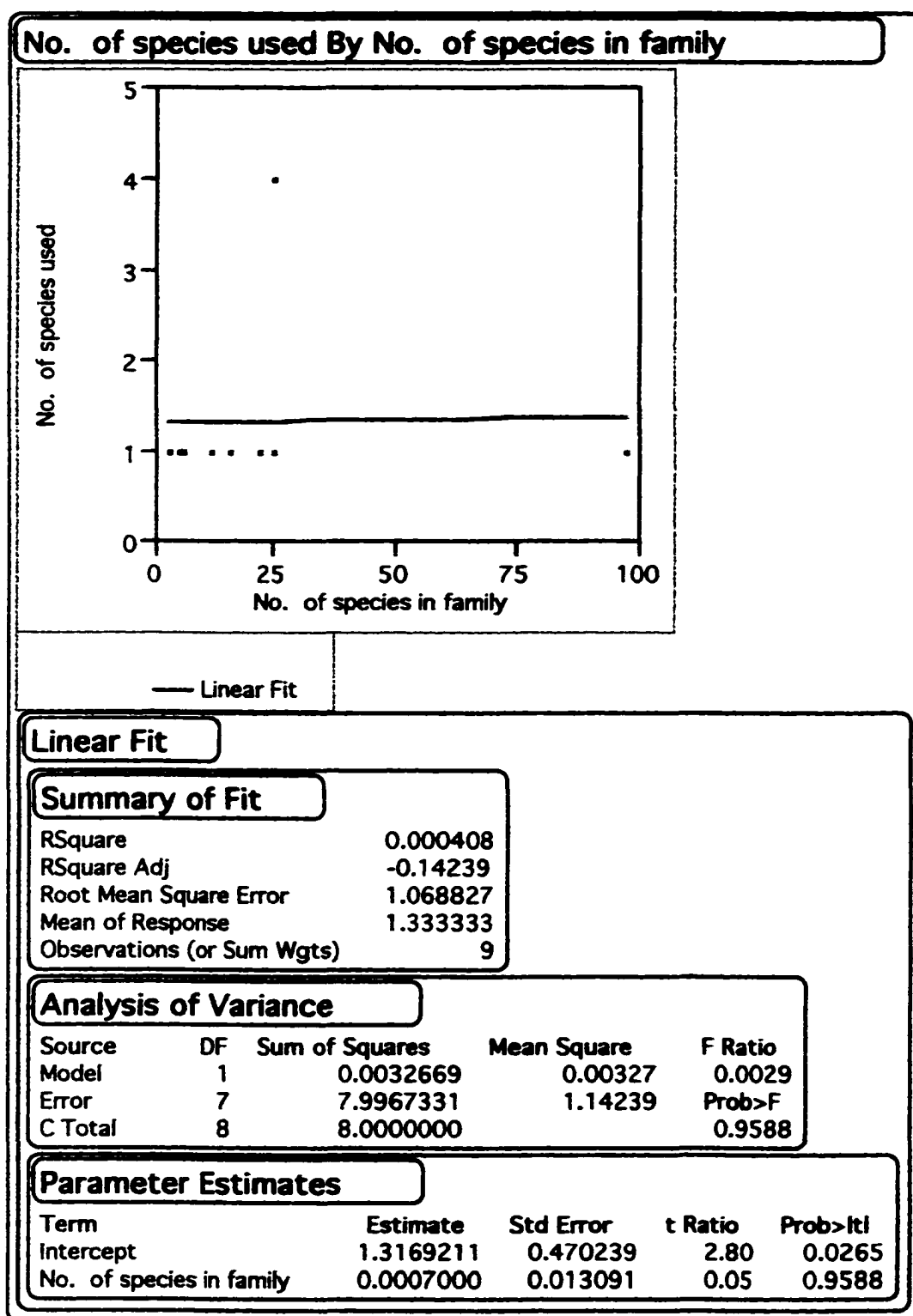


Figure 23: Line of best fit of plants that are used to treat cold sweat.
 $P = 0.9588$, not significant.

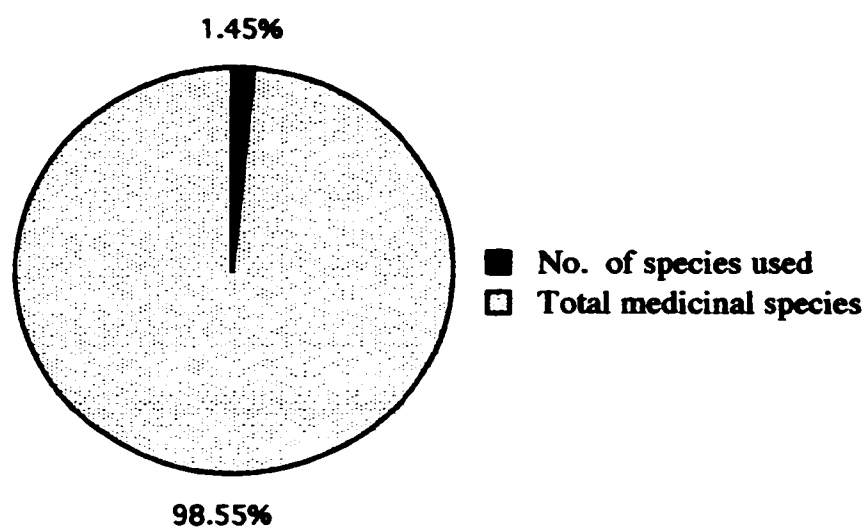


Figure 24: Pie chart showing percent medicinal flora that are used for treating conjunctivitis (anti-conjunctivitis).

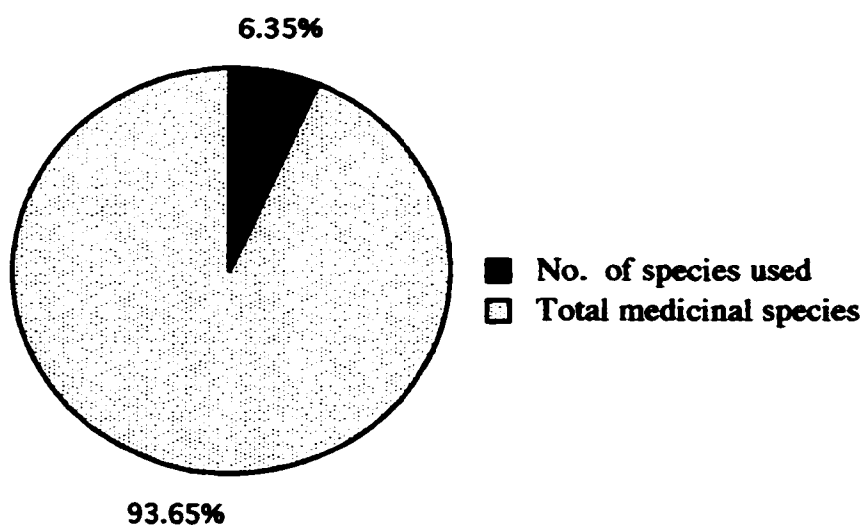


Figure 25: Pie chart showing percent medicinal species that are used for treating coughing.

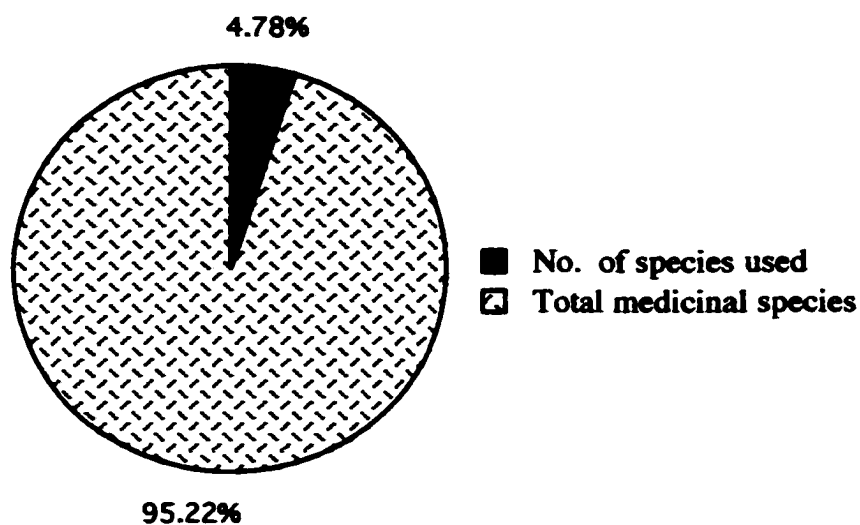


Figure 26: Pie chart showing percent medicinal species that are used for treating superficial cuts and wounds.

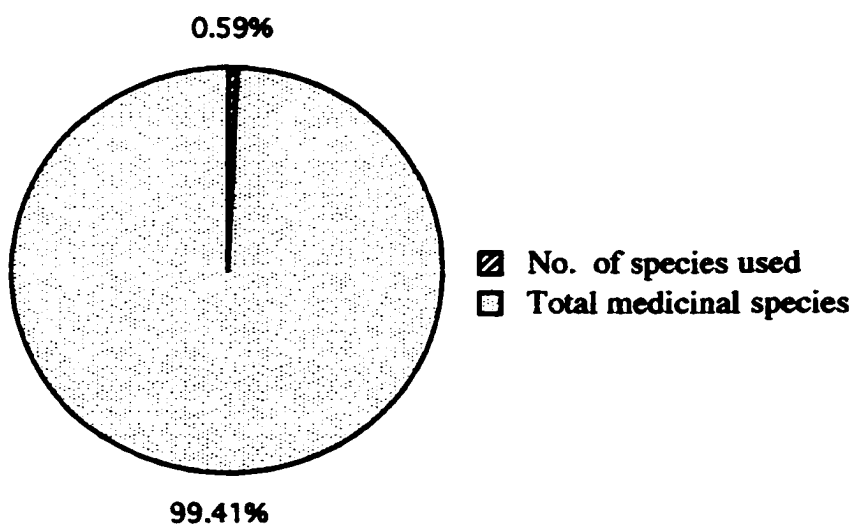


Figure 27: Pie chart showing percent medicinal species that are used for treating diabetes (anti-diabetic).

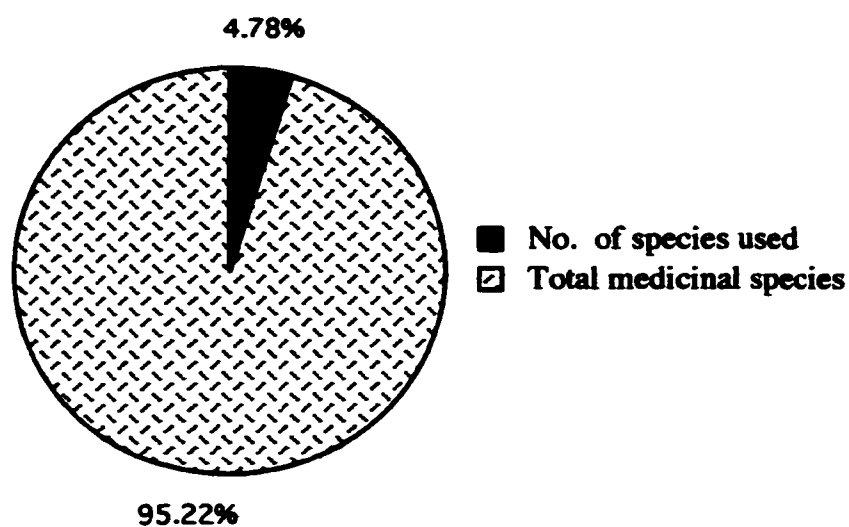


Figure 28: Pie chart showing percent medicinal species that are used for treating eczema.

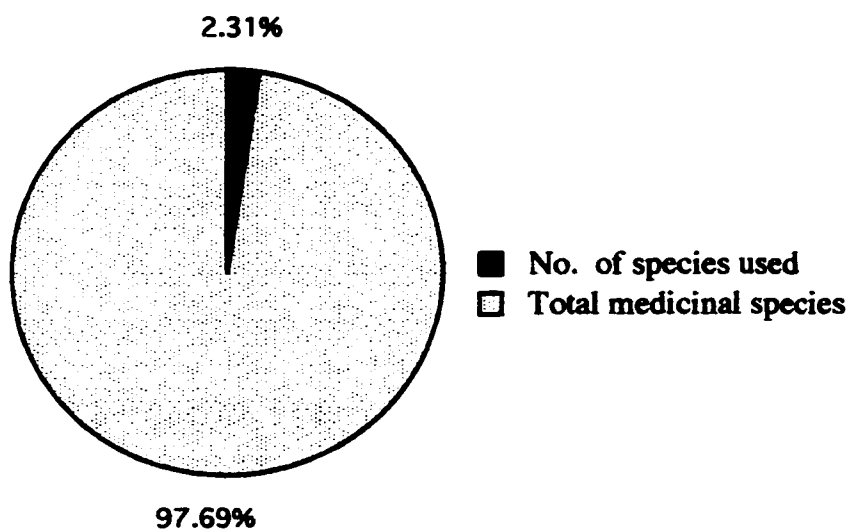


Figure 29: Pie chart showing percent medicinal species that are used as emetics.

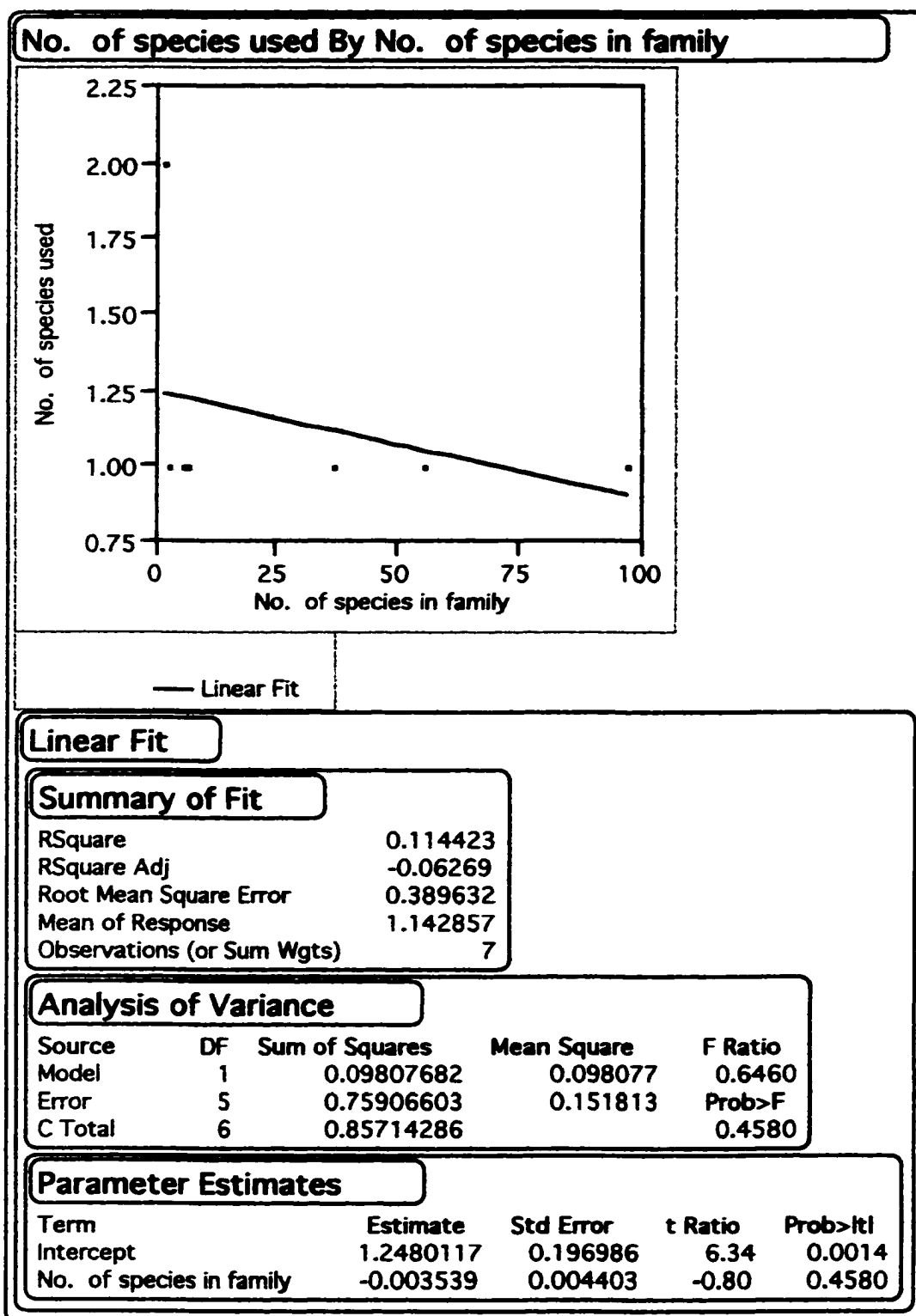


Figure 30: Line of best fit of plants that are used as emetics.

$P = 0.4580$, not significant.

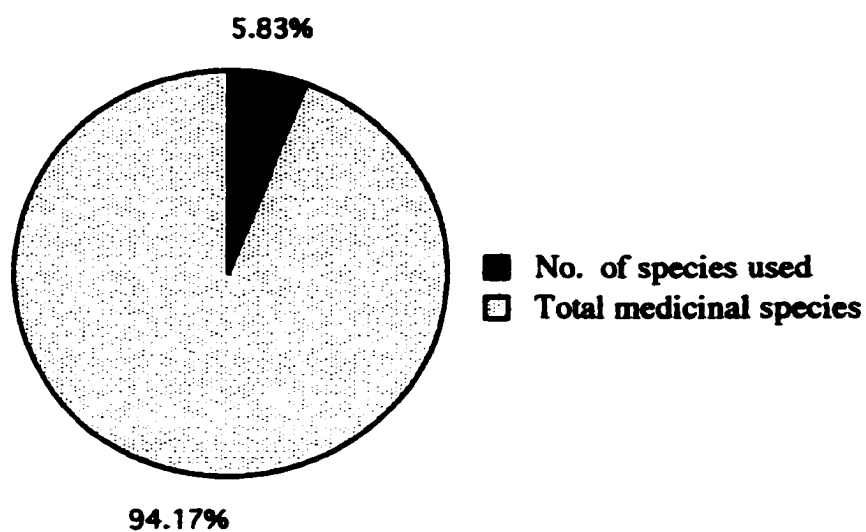


Figure 31: Pie chart showing percent medicinal species that are used as emollient agents.

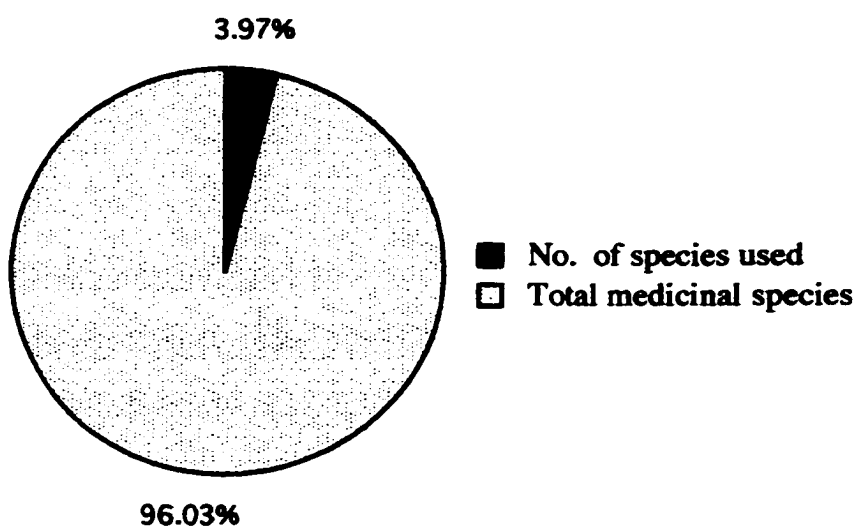


Figure 32: Pie chart showing percent medicinal species that are used as fish poison.

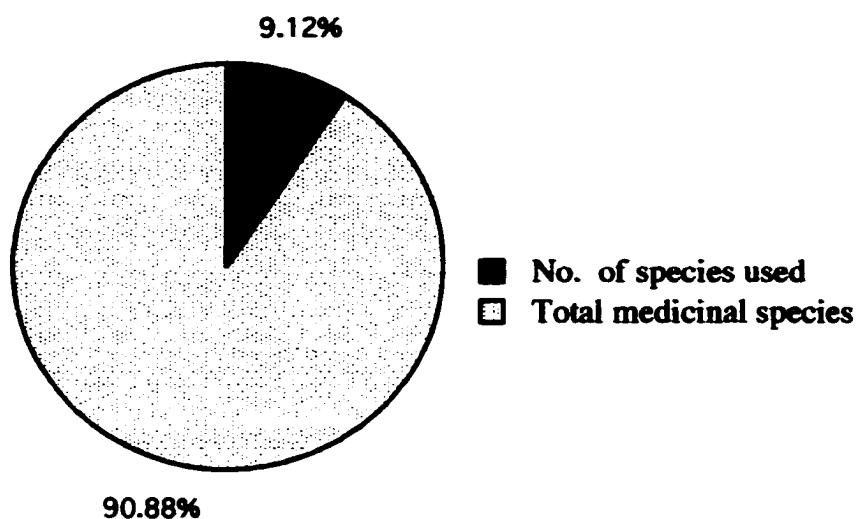


Figure 33: Pie chart showing percent medicinal species that are used for treating fungal infections (anti-fungal).

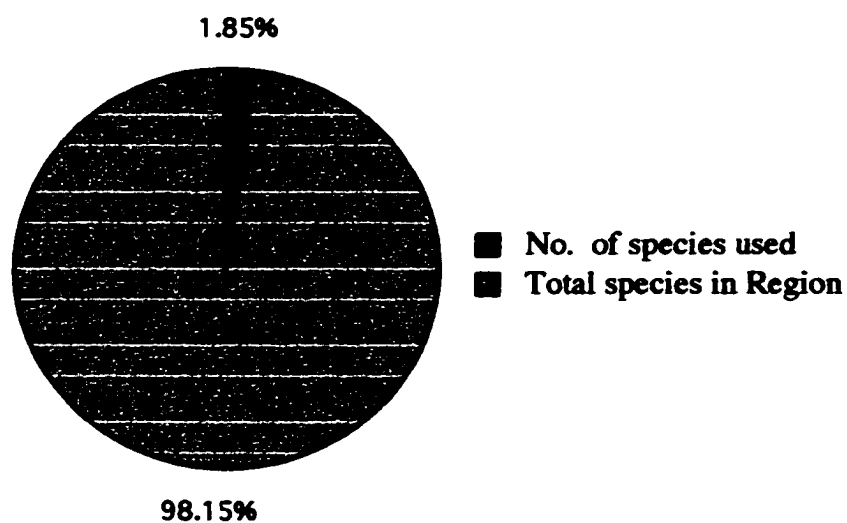


Figure 34: Percent flora of the Region that are used for treating fungal infections.

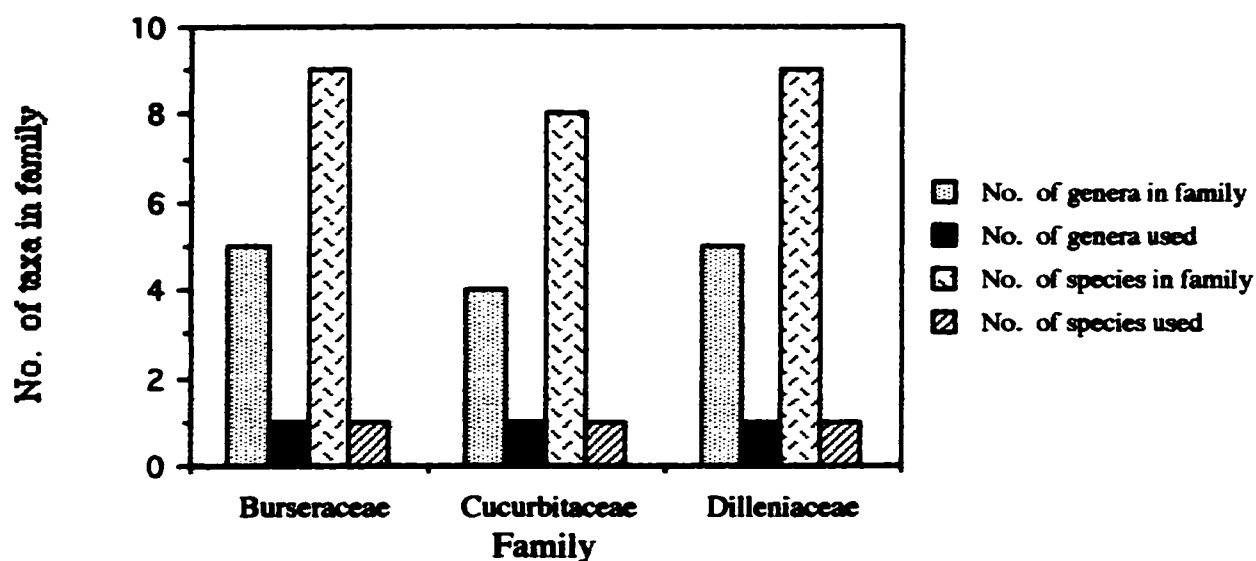


Figure 35: Graph of number of taxa in family versus family of plants used to treat hepatitis. One species of the Burseraceae, one species of the Cucurbitaceae and one species of the Dilleniaceae is used.

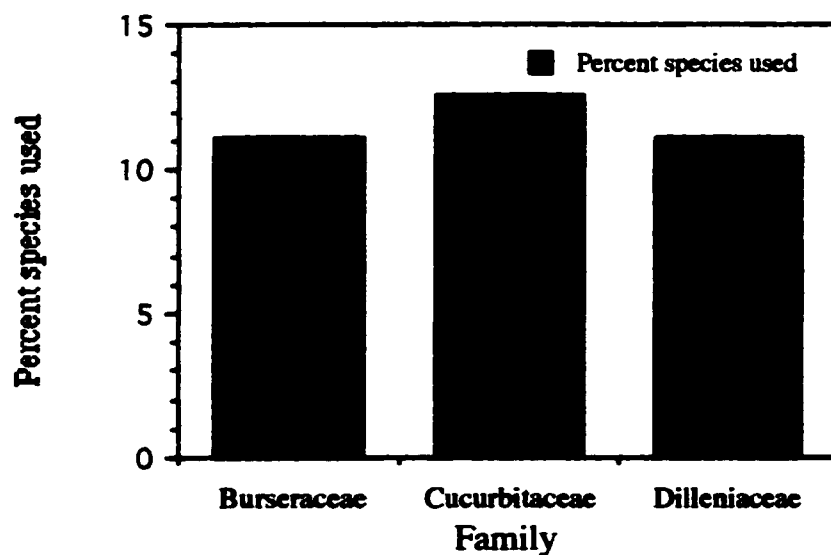


Figure 36: Graph of percent species used versus family of plants used to treat hepatitis. 12.5% Cucurbitaceae and 11.11% Burseraceae and Dilleniaceae are used respectively.

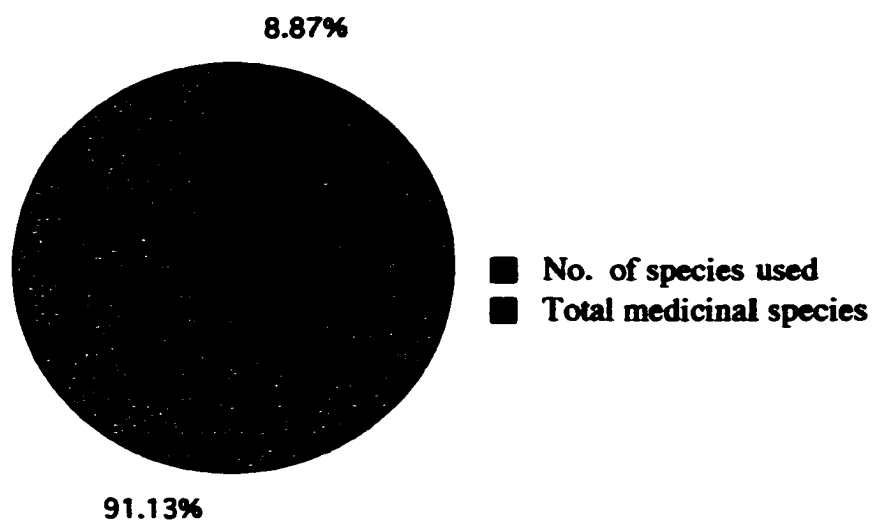


Figure 37: Pie chart showing percent medicinal species of the Region that are used for herbal baths.

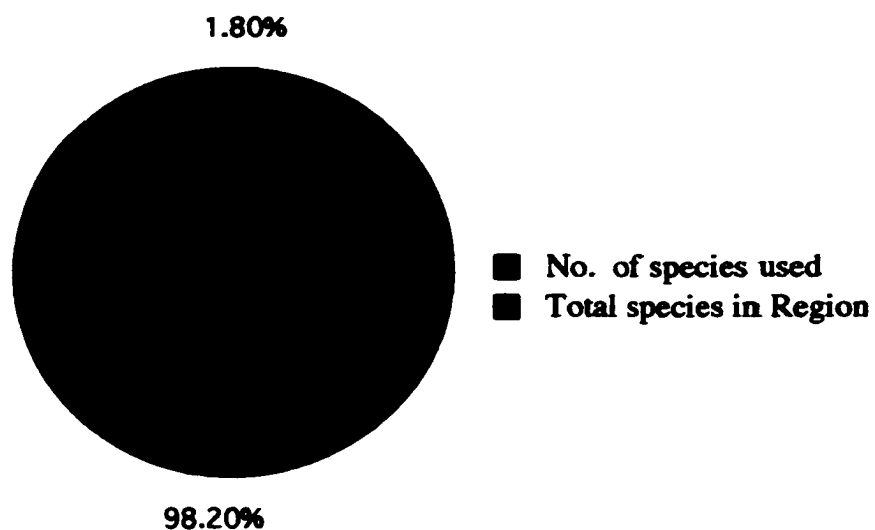


Figure 38: Pie chart showing percent flora of the Region that are used for herbal baths.

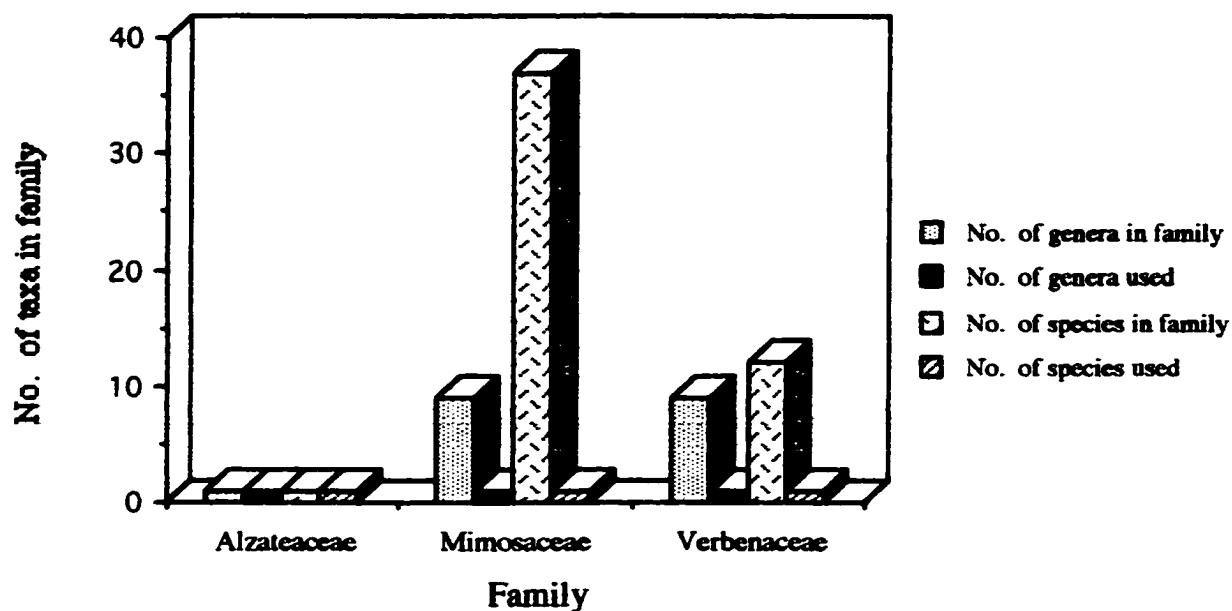


Figure 39: Graph of number of taxa in family versus family used to treat itchy scalp.

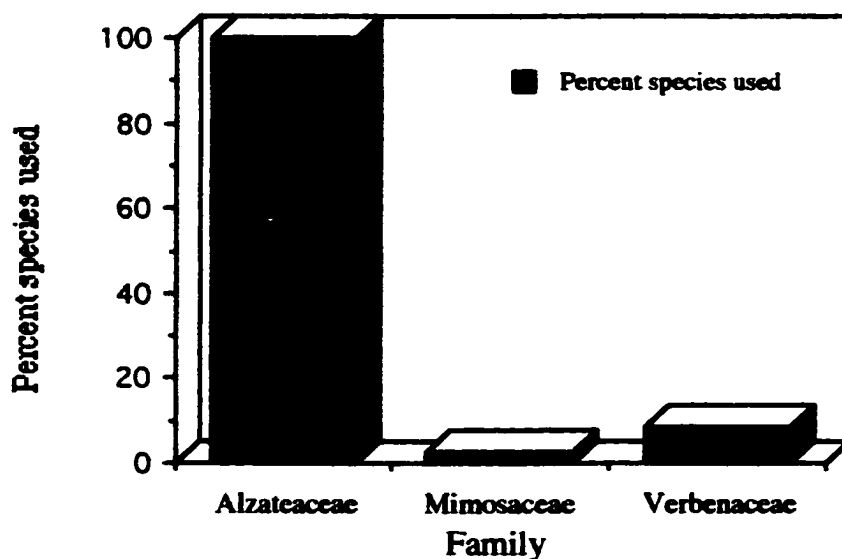


Figure 40: Graph of percent species used versus family of plants used to treat itchy scalp. The 100.0% in the Alzateaceae is represented by one species in the family, 2.7% of Mimosaceae (37 species) and 8.33% Verbenaceae (12 species) are used.

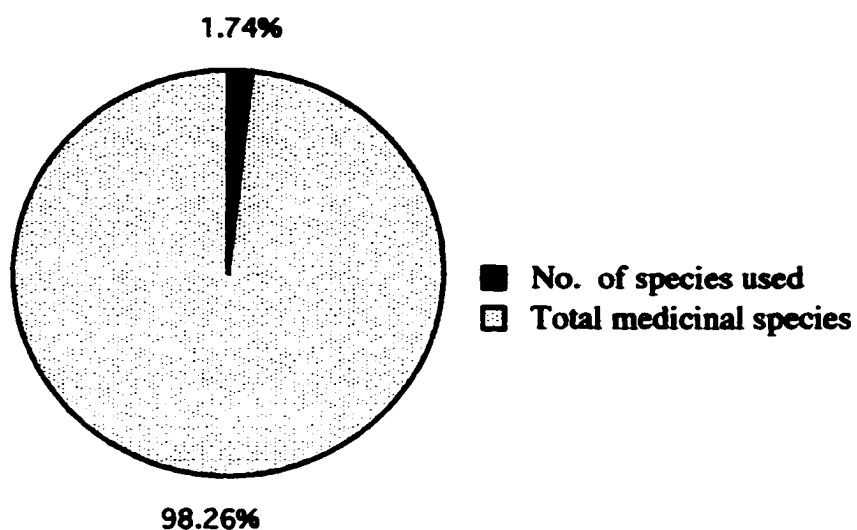


Figure 41: Pie chart showing percent medicinal species that are used for treating influenza.

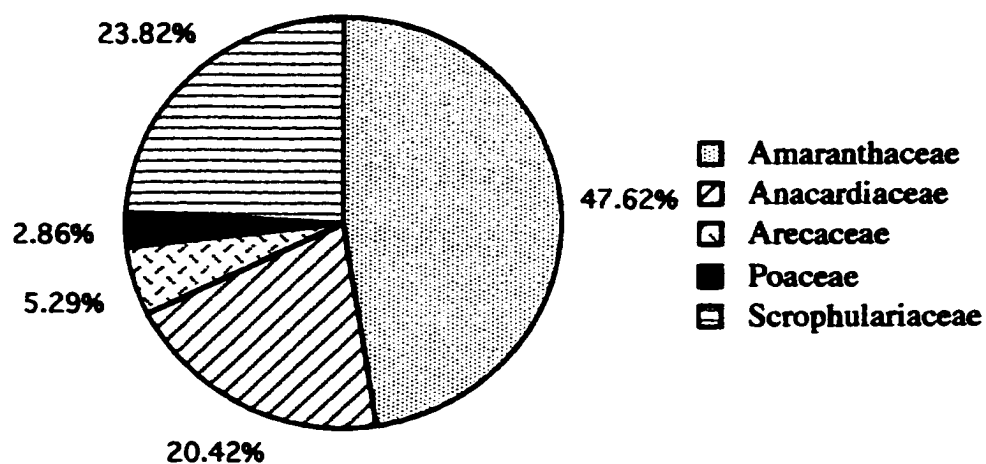


Figure 42: Pie chart showing percent families of the Region that are used for treating influenza.

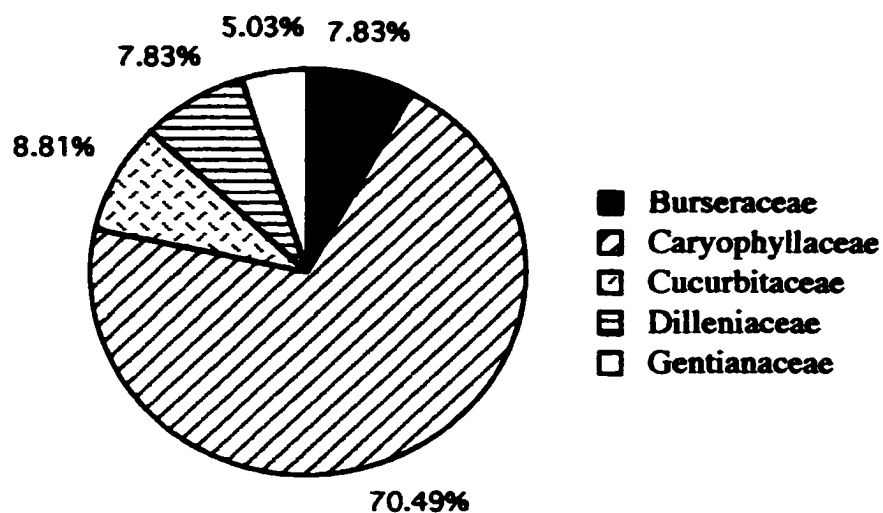


Figure 43: Pie chart showing percent families of the Region that are used for treating jaundice.

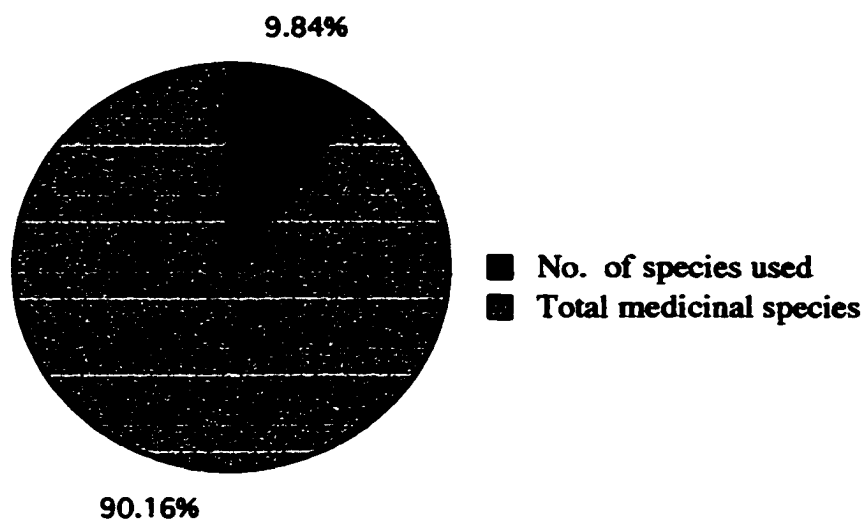


Figure 44: Pie chart showing the percent medicinal species that are used for treating malaria (anti-malarial).

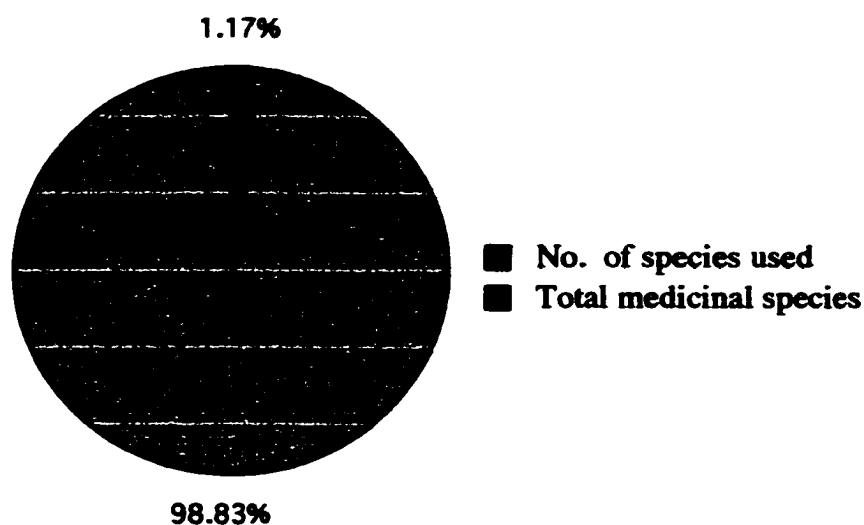


Figure 45: Pie chart showing percent medicinal species of the Region that are used for treating migraine.

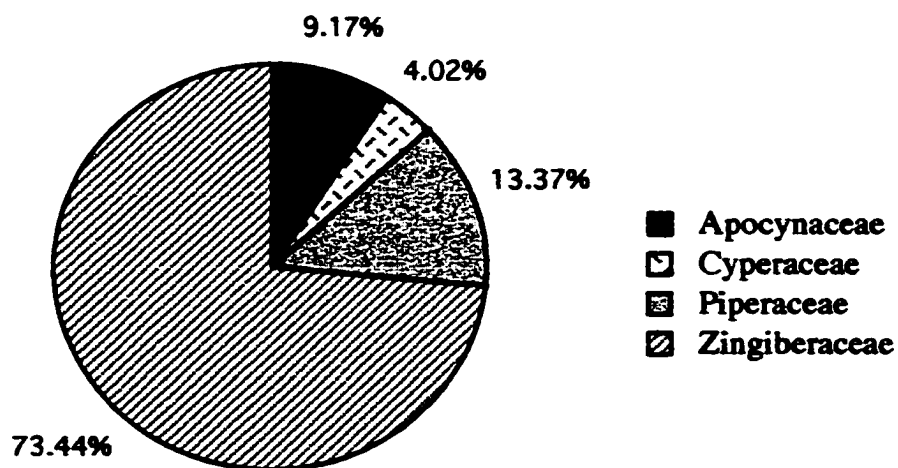


Figure 46: Pie chart showing percent families of the Region that are used for treating migraine.

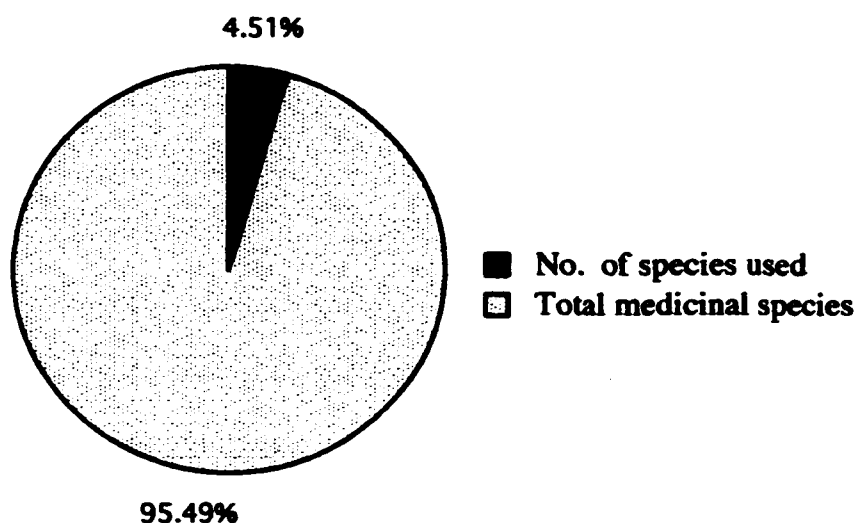


Figure 47: Pie chart showing percent medicinal species that are used for treating muscular aches and pains.

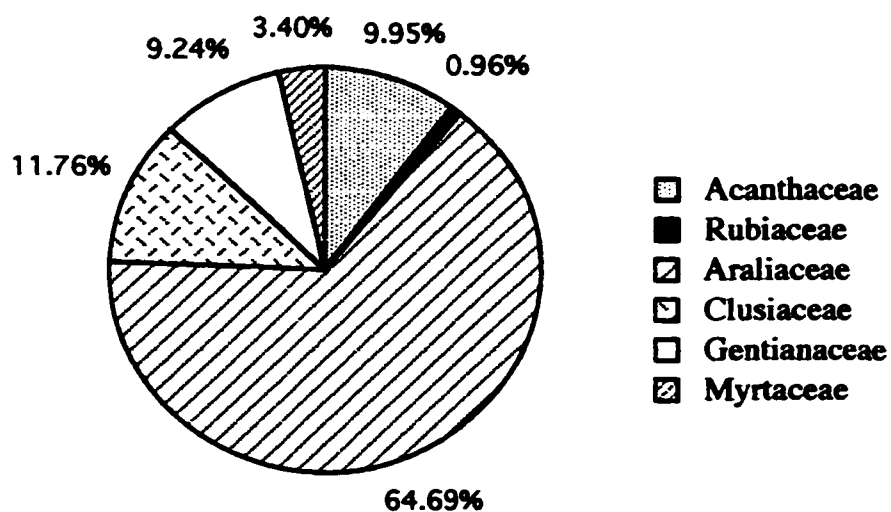


Figure 48: Pie chart showing percent families of the Region that are used for treating ringworm infections.

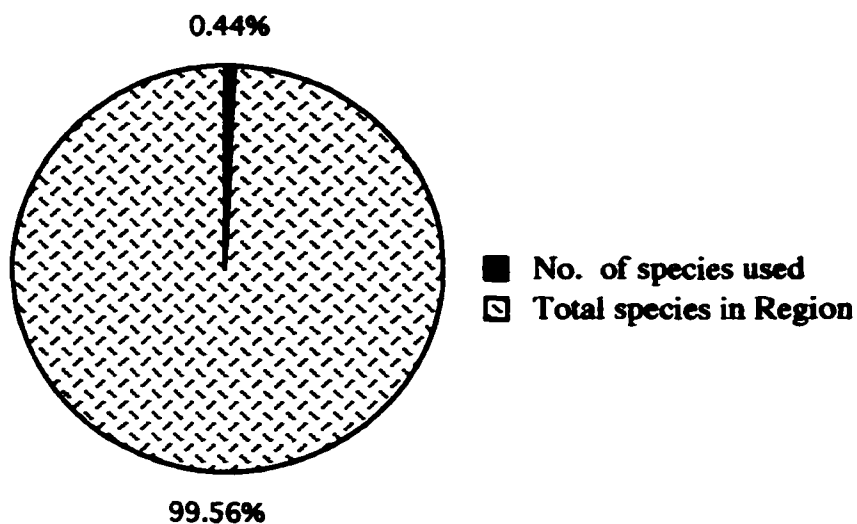


Figure 49: Pie chart showing percent flora of the Region that are used for treating ringworm infections.

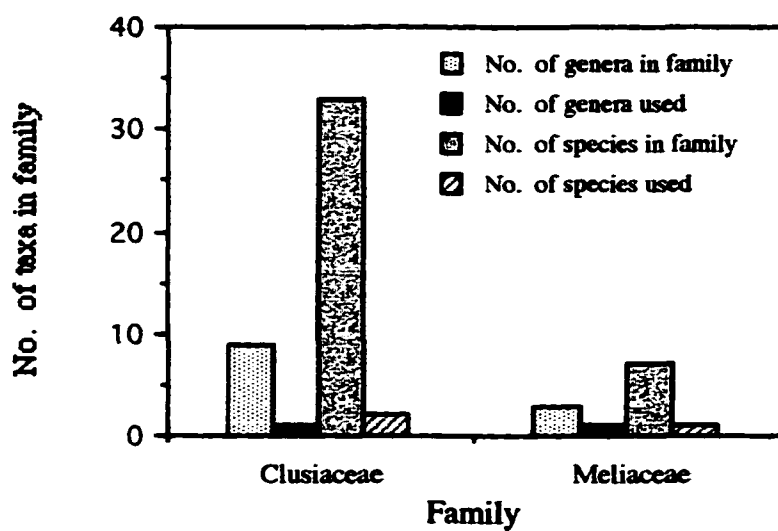


Figure 50: Graph of number of taxa in family versus family of plants that are used to treat scaling skin. Two species of Clusiaceae and one species of Meliaceae are used.

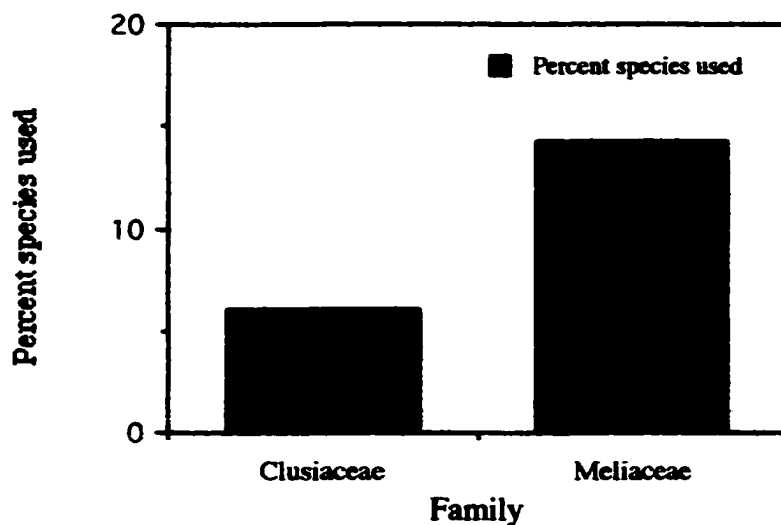


Figure 51: Graph of percent species used versus family of plants used for treating scaling skin. 6.06% of Clusiaceae and 14.29% of the Meliaceae are used.

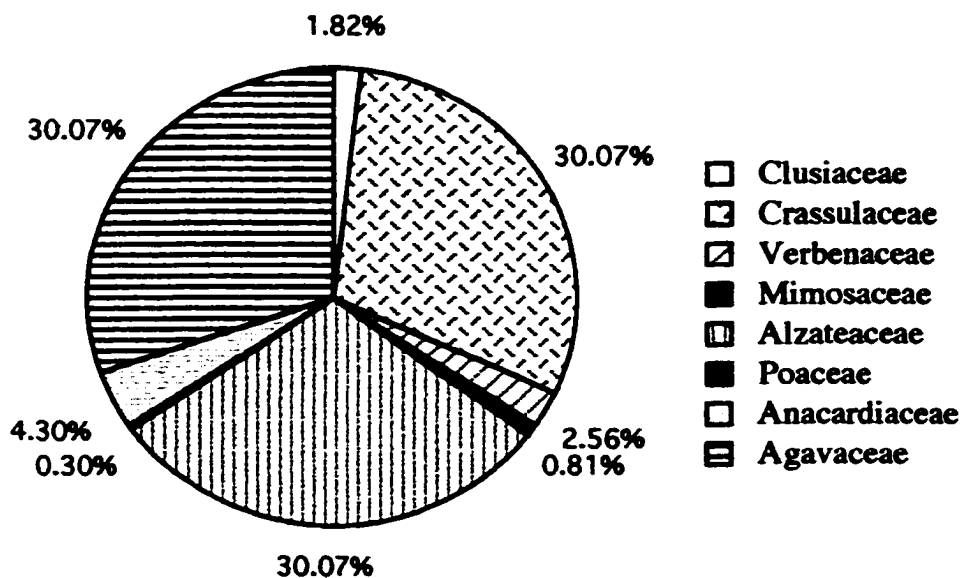


Figure 52: Pie chart showing percent families of the Region that are used as shampoo.

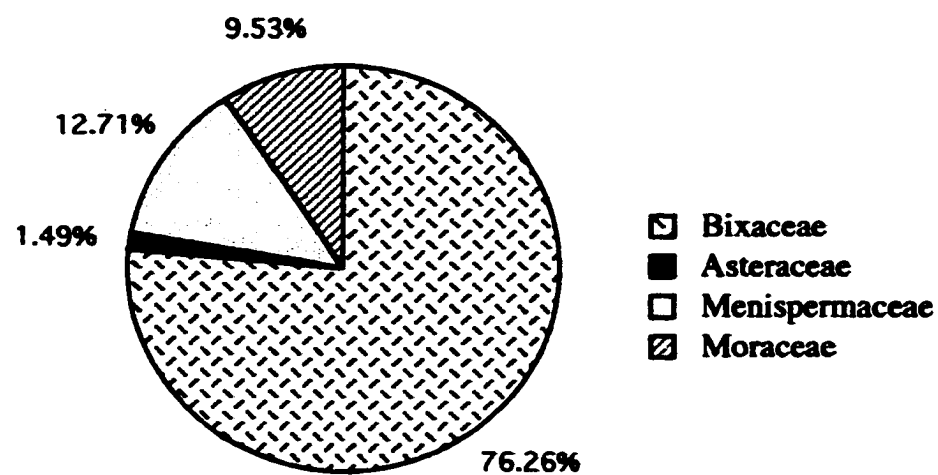


Figure 53: Pie chart showing percent families of the Region that are used for treating skin conditions.

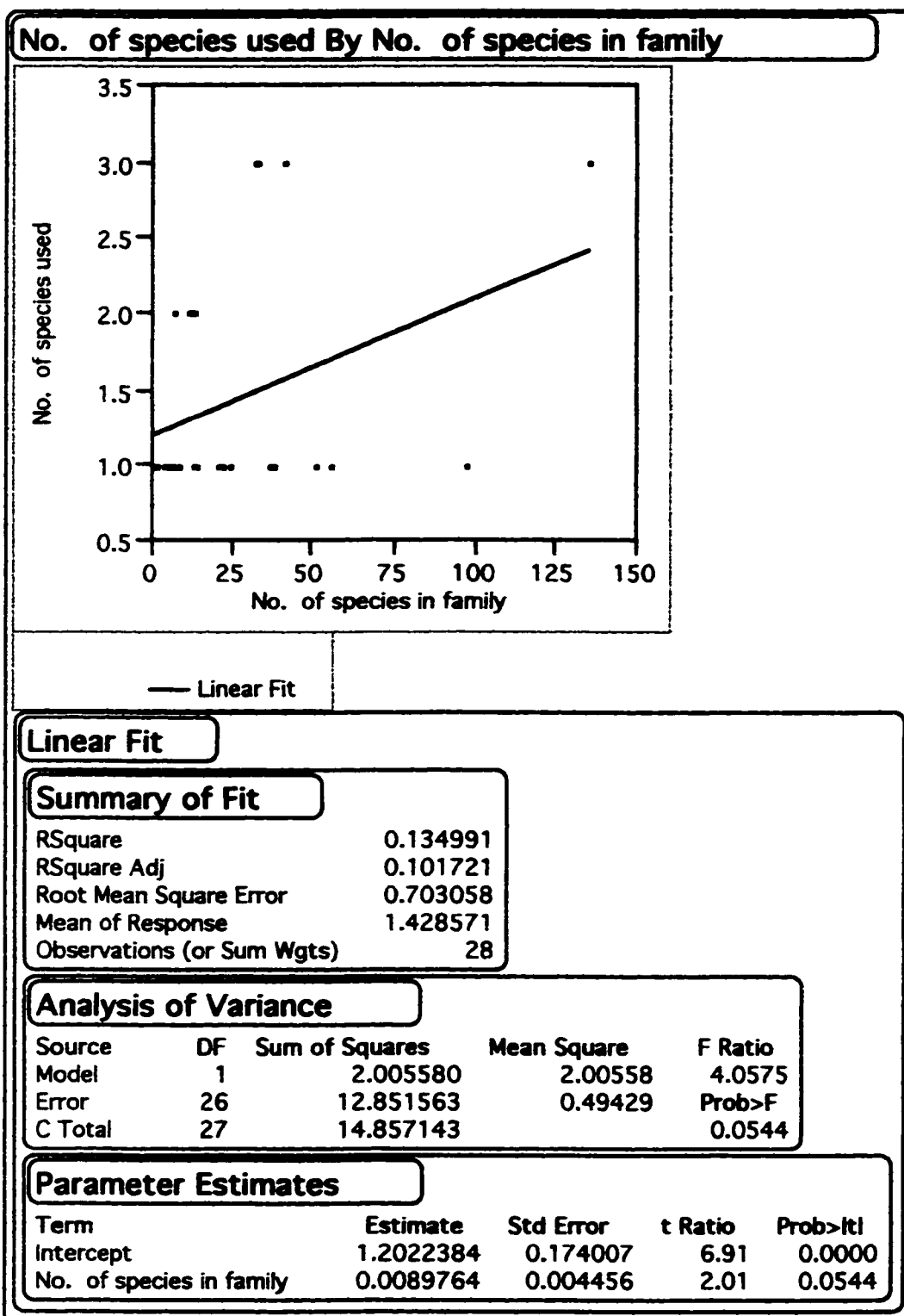


Figure 54: Graph showing line of best fit of plants that are used to treat sores.
 $P = 0.0544$, significant.

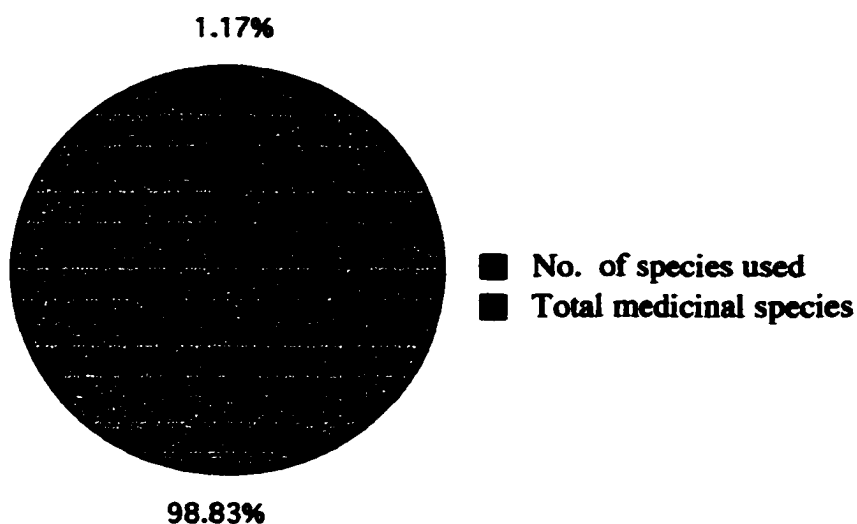


Figure 55: Pie chart showing percent medicinal species that are used for treating thrush.

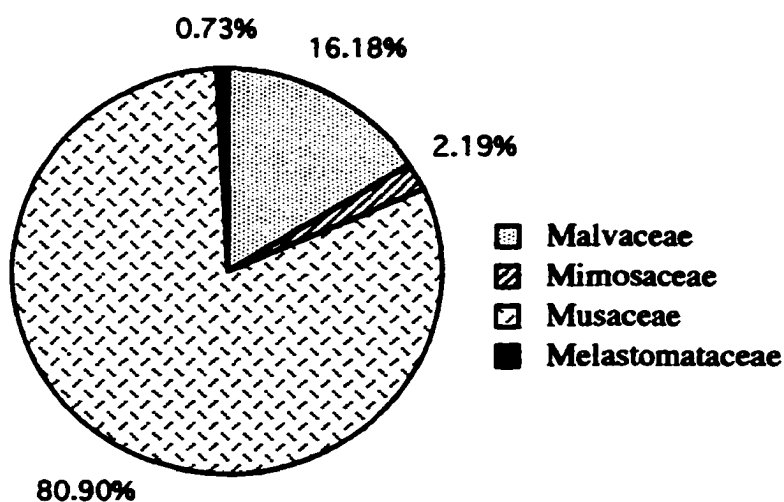


Figure 56: Pie chart showing percent families of the Region that are used for treating thrush.

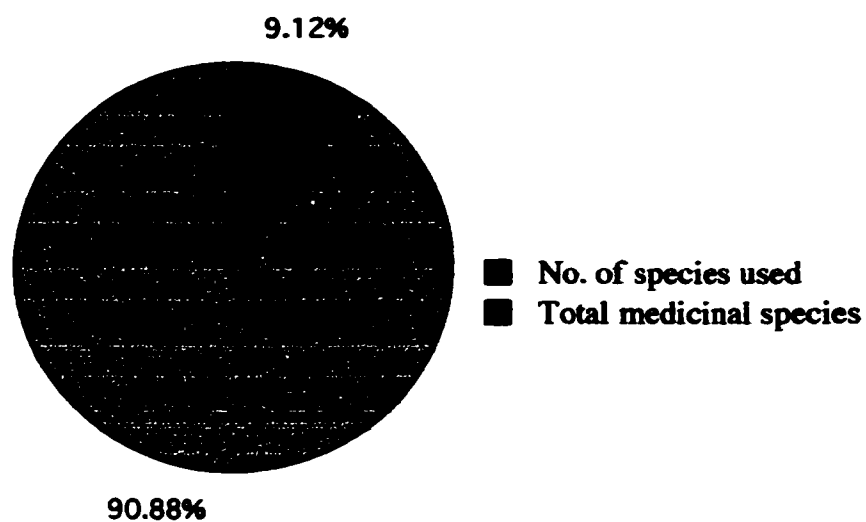


Figure 57: Pie chart showing percent medicinal species that are used for making tonics.

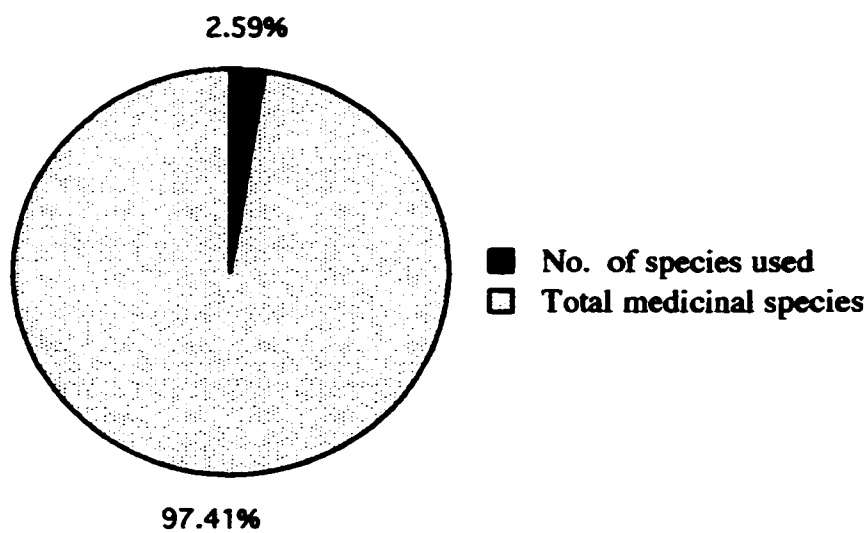


Figure 58: Pie chart showing percent medicinal species that are used for treating tuberculosis.

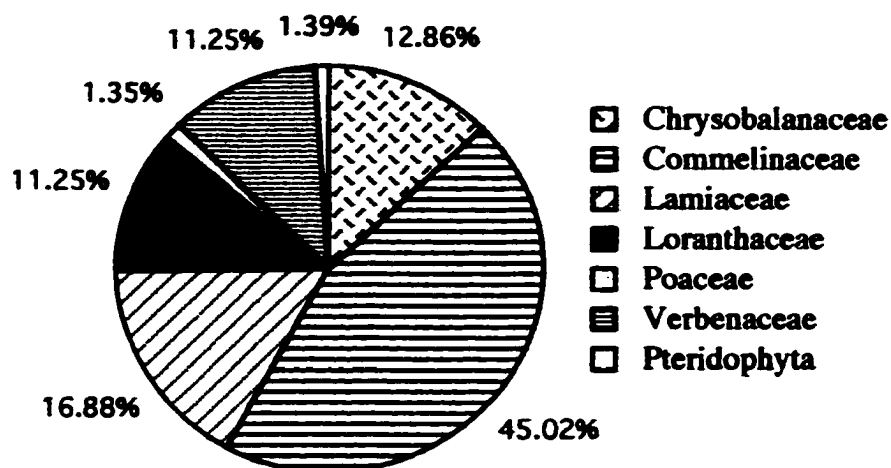


Figure 59: Pie chart showing percent families of the Region that are used for treating tuberculosis.

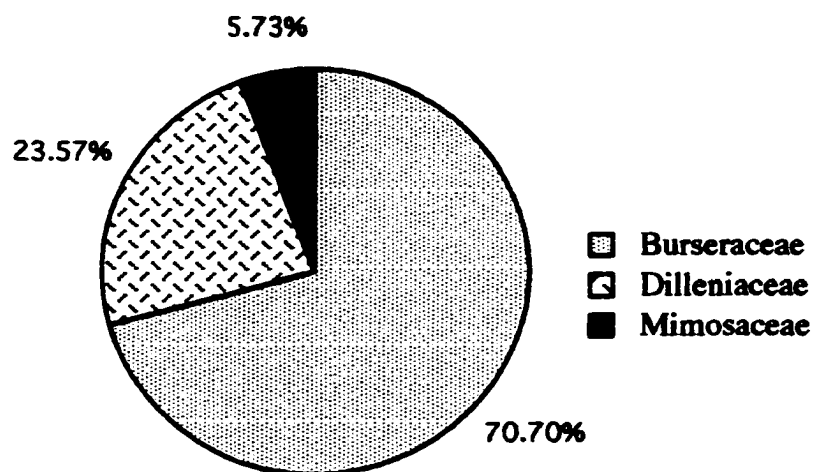


Figure 60: Pie chart showing percent families of the Region that are used for treating ulcers (anti-ulcergenic).

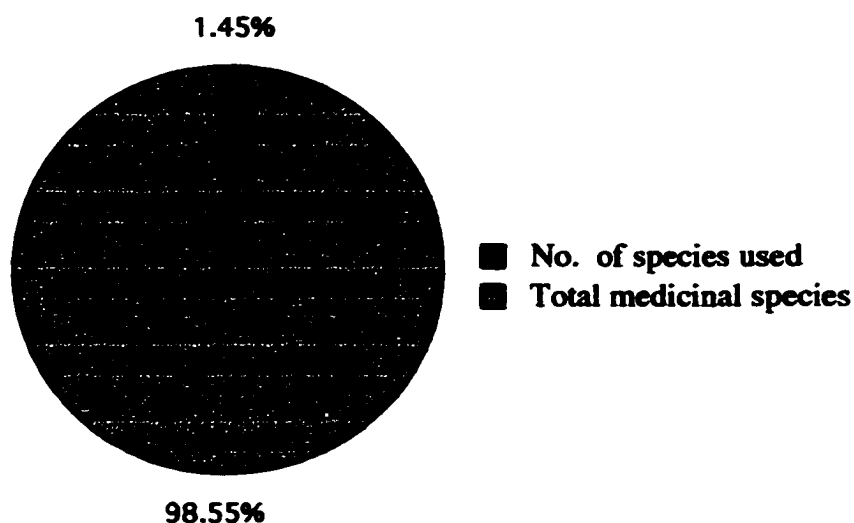


Figure 61: Pie chart showing percent medicinal species used to treat venereal diseases.

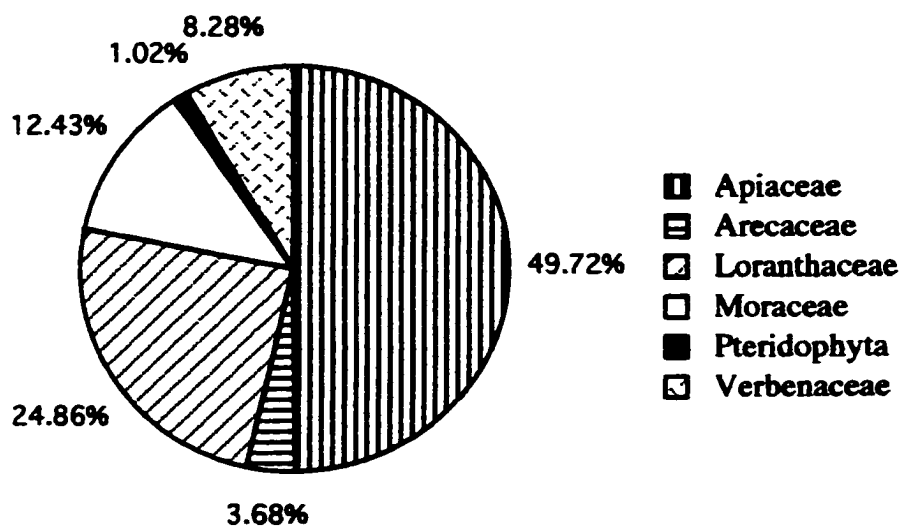


Figure 62: Pie chart showing percent families of the Region that are used for treating whooping cough.

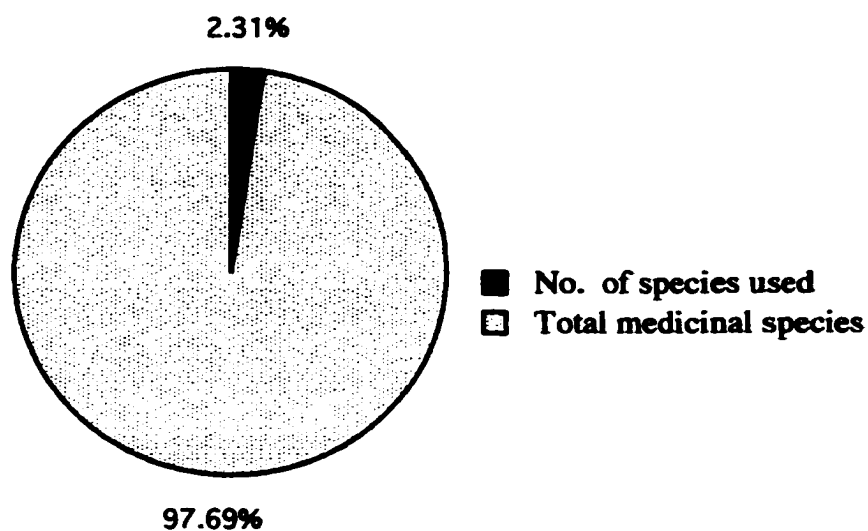


Figure 63: Pie chart showing percent medicinal species used for treating whooping cough.

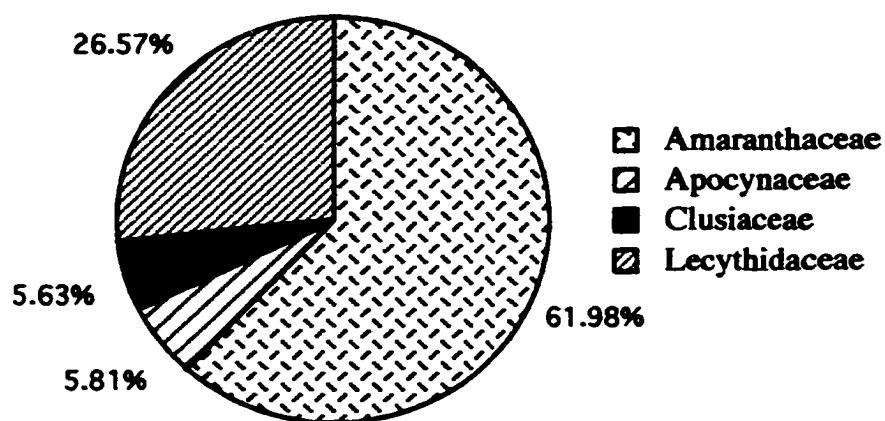


Figure 64: Pie chart showing percent families of the Region that are used for treating deep wounds.

Appendix 4

The summary below is based on the Engler and Prantl system of classification as found in the National Herbarium of Guyana at the University of Guyana. Also, I have included in this list the Ascomycetes and the Pteridophyta even though these two groups are not among the higher plants.

Table 157: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Abolbodaceae	1	0	2	0
Acanthaceae	8	1	13	1
Agavaceae	1	1	1	1
Alistmataceae	1	0	1	0
Alzateaceae	1	1	1	1
Amaranthaceae	3	2	3	2
Amaryllidaceae	4	2	5	3
Anacardiaceae	6	2	7	3
Annonaceae	10	7	22	11
Apiaceae	2	2	2	2
Apocynaceae	16	3	32	8
Aquifoliaceae	1	0	1	0
Araceae	10	3	37	6
Araliaceae	2	1	2	1
Arecaceae	13	5	27	5
Aristolochiaceae	1	1	1	1

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Asclepiadaceae	6	0	8	0
Ascomycetes	1	1	2	1
Asteraceae	27	9	51	11
Begoniaceae	1	0	6	0
Bignoniaceae	12	3	19	3
Bixaceae	1	1	1	1
Bombacaceae	5	1	10	1
Bonnetiaceae	3	0	3	0
Boraginaceae	3	1	8	2
Bromeliaceae	16	1	36	1
Burmanniaceae	5	0	10	0
Burseraceae	5	4	9	5
Cactaceae	2	0	2	0
Caesalpiniaceae	18	6	56	11
Campanulaceae	3	0	4	0
Cannaceae	1	1	1	1
Capparidaceae	3	0	3	0
Caricaceae	1	1	1	1
Caryocaraceae	1	0	2	0
Caryophyllaceae	1	1	2	2
Cecropiaceae	3	2	5	3
Celastraceae	1	0	1	0

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Chenopodiaceae	1	1	1	1
Chloranthaceae	1	0	1	0
Chrysobalanaceae	4	1	21	3
Clusiaceae	9	7	33	20
Combretaceae	3	1	7	1
Commelinaceae	5	4	6	4
Connaraceae	1	0	1	0
Convolvulaceae	3	0	5	0
Costaceae	1	1	5	3
Crassulaceae	1	1	1	1
Cucurbitaceae	4	1	8	1
Cunoniaceae	1	0	1	0
Cyclanthaceae	4	0	8	0
Cyperaceae	19	4	73	6
Cyrtillaceae	1	1	2	1
Dichapetalaceae	2	0	2	0
Dilleniaceae	5	4	9	6
Dioscoreaceae	1	0	3	0
Droseraceae	1	0	3	0
Ebenaceae	1	0	2	0
Elaeocarpaceae	1	1	3	1
Ericaceae	9	0	14	0

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Eriocaulaceae	4	0	12	0
Erythroxylaceae	1	1	3	1
Euphorbiaceae	25	10	41	13
Fabaceae	26	9	43	12
Flacourtiaceae	3	1	5	1
Gentianaceae	8	1	14	2
Gesneriaceae	14	1	20	1
Goupiaceae	1	0	1	0
Haemodoraceae	1	0	1	0
Heliconiaceae	1	1	7	1
Hippocrateaceae	5	1	7	1
Humiriaceae	2	0	4	0
Icacinaceae	4	1	4	1
Iridaceae	3	1	3	1
Ixonanthaceae	1	0	1	0
Juncaceae	1	0	1	0
Lacistemataceae	1	0	1	0
Lamiaceae	4	2	8	4
Lauraceae	7	4	16	5
Lecythidaceae	3	1	7	2
Lentibulariaceae	2	0	13	0
Lissocarpaceae	1	0	1	0

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Loganiaceae	2	1	4	2
Loranthaceae	7	5	12	6
Lycopodiaceae	2	1	3	1
Lythraceae	1	0	1	0
Malpighiaceae	7	3	25	9
Malvaceae	4	3	5	4
Marantaceae	4	0	12	0
Marcgraviaceae	4	1	4	1
Melastomataceae	28	5	111	6
Meliaceae	3	3	7	4
Mendonciaceae	1	0	2	0
Menispermaceae	4	4	6	5
Mimosaceae	9	5	37	8
Monimiaceae	2	1	2	1
Moraceae	4	2	8	6
Musaceae	1	1	1	1
Myristicaceae	2	2	2	2
Myrsinaceae	3	0	13	0
Myrtaceae	10	8	38	17
Nyctaginaceae	1	0	1	0
Nymphaeaceae	1	0	1	0
Ochnaceae	3	0	8	0

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Olacaceae	3	0	5	0
Oleandraceae	2	0	3	0
Onagraceae	2	0	6	0
Orchidaceae	38	0	92	0
Oxalidaceae	2	0	2	0
Papaveraceae	2	2	2	2
Passifloraceae	1	1	10	4
Phytolaccaceae	1	0	1	0
Piperaceae	3	2	22	8
Poaceae	38	5	100	6
Podocarpaceae	1	0	1	0
Podostemaceae	5	0	6	0
Polygalaceae	4	0	11	0
Polygonaceae	3	0	4	0
Pontederiaceae	2	0	2	0
Portulacaceae	1	1	1	1
Proteaceae	2	1	2	1
Pteridophyta	38	6	97	6
Quiinaceae	2	0	3	0
Rapateaceae	5	0	12	0
Rhamnaceae	1	0	2	0
Rubiaceae	40	6	135	8

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Rutaceae	4	3	5	4
Sabiaceae	1	0	1	0
Sapindaceae	8	2	11	4
Sapotaceae	8	3	13	4
Schizaeaceae	3	0	5	0
Scrophulariaceae	6	1	6	1
Selaginellaceae	1	0	7	0
Simaroubaceae	2	2	4	2
Smilacaceae	1	1	4	3
Solanaceae	9	6	25	15
Sphenocleaceae	1	0	1	0
Stereuliaceae	3	0	5	0
Strelitziaceae	1	0	1	0
Symplocaceae	1	0	1	0
Tectariaceae (fern)	3	0	4	0
Theaceae	2	1	4	1
Theophrastaceae	1	0	1	0
Thurniaceae	1	0	1	0
Thymelaeaceae	1	0	6	0
Tiliaceae	5	2	6	3
Trigoniaceae	1	0	2	0
Triuridaceae	1	0	1	0

Continued: Summary of the Flora of the Potaro-Siparuni region and Medicinal Flora of the study sites.

Family	No. of genera in family	No. of genera used	No. of species in family	No. of species used
Turneraceae	5	2	6	2
Ulmaceae	2	1	3	1
Urticaceae	1	0	1	0
Verbenaceae	9	6	12	6
Violaceae	2	0	6	0
Vitaceae	1	0	1	0
Vittariaceae [fern]	1	0	2	0
Vochysiaceae	3	1	4	1
Xyridaceae	2	0	9	0
Zingiberaceae	2	2	4	2

Appendix 5

Table 158: Medicinal use categories and number of species used to treat each category at Kamana

Medicinal use	No. of families used	No. of genera used	No. of species used
Abortifacient	1	1	1
Acne	1	1	1
Analgesic	8	8	8
Anti-arthritic	1	1	1
Anti-asthmatic	6	6	6
Antibacterial	2	2	2
Anti-conjunctivitis	2	2	2
Anti-diarrheal	16	19	22
Anti-drooling	2	2	2
Anti-dysenteric	4	4	5
Anti-fungal	9	8	9
Anti-helminthic	2	2	2
Antihistamine	1	1	1
Anti-hypertensive	1	1	1
Anti-infective	2	2	2
Anti-inflammatory	3	3	3
Anti-malarial	8	10	12
Anti-menorrhagic	4	5	5
Anti-microbial	2	2	2
Anti-pruritic	3	3	3
Anti-pyretic	6	6	6

Continued: Medicinal use categories and number of species used to treat each category at Kamana

Medicinal use	No. of families used	No. of genera used	No. of species used
Antiseptic	7	7	7
Anti-tuberculosis	2	2	2
Anti-venom	1	1	2
Aphrodisiac	2	2	2
Back pain	5	5	5
Bed-wetting (babies)	2	2	2
Biliousness	4	4	4
Blood purifier	2	2	2
Bush yaws	11	13	15
Chicken pox	9	9	9
Cold sweat	1	1	1
Colds	7	7	7
Coughing	1	1	1
Dermatosis	2	2	2
Dry skin	1	1	1
Eczema	3	3	3
Emetic	1	1	1
Emollient	5	5	5
Eye infections	1	1	1
Fish poison	3	3	3
Flavouring agent	1	1	1
Herbal bath	7	7	8

Continued: Medicinal use categories and number of species used to treat each category at Kamana

Medicinal use	No. of families used	No. of genera used	No. of species used
Heart fluttering	1	1	1
Heart burn	1	1	1
Hepatitis	1	1	1
Incense	1	2	2
Insecticide	3	3	3
Intoxicant	1	1	1
Irritant	1	1	1
Impotence	2	2	2
Influenza	1	1	1
Itching scalp	1	1	1
Jaundice	1	1	1
Laxative	1	1	2
Measles	6	6	6
Migraine	1	1	1
Muscular aches	1	1	1
Muscle relaxant	1	1	1
Pink eye	1	1	1
Poison	4	4	4
Skin conditions	1	1	1
Sores	14	17	17
Swollen stomach	1	1	1
To calm babies	1	1	1

Continued: Medicinal use categories and number of species used to treat each category at Kamana

Medicinal use	No. of families used	No. of genera used	No. of species used
Toothache	2	2	2
Warts	1	1	1
Whooping cough	1	1	1
Cuts and wounds	4	4	4

Appendix 6

Table 159: Medicinal use categories and number of species used to treat each category at Kato

Medicinal use	No. of families used	No. of genera used	No. of species used
Abortifacient	1	1	1
Abscesses	2	2	2
Analgesic	2	2	2
Anti-arthritic	3	3	3
Anti-asthmatic	7	7	8
Anticonjunctivitis	3	3	3
Anti-diabetic	1	1	1
Anti-diarrheal	15	20	28
Anti-diuretic	1	1	1
Anti-drooling	1	1	1
Anti-dysenteric	6	7	12
Anti-fungal	10	11	13
Anti-helminthic	2	2	2
Anti-hypertensive	7	8	8
Anti-infective	3	3	4
Anti-irritant	2	2	2
Anti-malarial	10	10	13
Anti-menorrhagic	1	1	1
Anti-pruritic	13	15	18
Anti-tuberculosis	3	3	3
Anti-ulcerigenic	3	3	3

Continued: Medicinal use categories and number of species used to treat each category at Kato

Medicinal use	No. of families used	No. of genera used	No. of species used
Anti-venom	3	3	3
Antibacterial	7	7	8
Antiseptic	5	6	7
Aphrodisiac	1	1	1
Back pain	6	8	8
Bitter blood	1	1	1
Bleeding	1	1	1
Blood purifier	2	2	2
Bush yaws	3	3	3
Cataract	1	1	1
Chicken pox	8	10	10
Cold sweat	1	1	1
Colds	18	20	21
Coughs	7	8	9
Cracked hee	1	1	1
Cuts & wounds	2	4	5
Decongestant	1	1	1
Diaper rash	1	1	1
Drt skin	1	1	1
Dye	1	1	1
Eczema	4	5	5
Emetic	3	3	3

Continued: Medicinal use categories and number of species used to treat each category at Kato

Medicinal use	No. of families used	No. of genera used	No. of species used
Emollient	5	5	5
Eye infections	6	6	6
Fish poison	5	5	7
Flavouring agent	5	5	5
Hair growth	1	1	1
Heartburn	1	1	1
Heart flutter	1	1	1
Hallucinogenic	2	2	2
Hepatitis	2	2	2
Herbal bath	14	15	16
Impotence	1	3	3
Incense	1	1	1
Influenza	2	2	2
Insect repellent	1	1	1
Intestinal pain	1	1	1
Intoxicant	2	2	2
Itchy scalp	1	1	1
Jaundice	2	2	2
Laxative	1	1	1
Measles	8	9	8
Migraine	3	3	3
Mumps	1	1	1
Muscle aches & pains	2	2	2

Continued: Medicinal use categories and number of species used to treat each category at Kato

Medicinal use	No. of families used	No. of genera used	No. of species used
Painting skin	1	1	1
Poison	2	2	2
Ringworm	1	1	2
Scabies	1	1	1
Scaling skin	2	2	3
Shampoo	6	6	7
Skin conditions (blazing)	1	1	1
Skin conditions	3	3	3
Skin conditions (spots)	1	1	1
Skin irritant	1	1	1
Soap	2	2	2
Sores	6	9	9
Sore mouth	1	1	1
Sunscreen	1	1	1
Thrush	1	1	1
Tonic	10	12	13
Venereal disease	1	1	1
Wheezing	1	1	1
Whooping cough	1	1	1
Wind pain	1	1	1
Wounds (deep)	1	1	1

Appendix 7

Table 160: Medicinal use categories and number of taxa used to treat each category at Kopinang

Medicinal use	No. of families used	No. of genera used	No. of species used
Analgesic	4	4	4
Anti-arthritic	1	1	1
Anti-asthmatic	1	1	1
Antibacterial	5	5	5
Anti-bronchitis	1	1	1
Anti-diarrheal	5	7	7
Anti-dysenteric	2	2	2
Anti-edemic	1	1	1
Anti-fungal	7	6	7
Anti-helminthic	2	2	2
Anti-herpetic	1	1	1
Anti-infective	2	2	2
Anti-malarial	4	4	6
Anti-menorrhagic	1	1	1
Anti-pruritic	2	2	2
Anti-pyretic	10	11	12
Antiseptic	5	5	5
Anti-tuberculosis	2	2	2
Anti-venom	1	1	1
Anti-viral	2	2	2
Aphrodisiac	1	1	1

Continued: Medicinal use categories and number of taxa used to treat each category at Kopinang

Medicinal use	No. of families used	No. of genera used	No. of species used
Back pain	4	5	5
Blood purifier	2	2	2
Burns	2	2	2
Bush yaws	3	3	3
Chicken pox	2	2	2
Cold sweat	6	7	7
Colds	6	6	6
Coughs	2	2	2
Dermatosis	1	1	1
Ear infections	2	2	2
Emetic	5	5	5
Emollient	4	4	4
Evil-eye	1	1	1
Fish poison	2	3	3
Herbal bath	8	9	9
Irritant	1	1	1
Intestinal cramps	1	1	1
Itchy scalp	1	1	1
Laxative	1	1	1
Measles	3	3	3
Muscle aches and pain	1	1	1
Poison	1	1	1

Continued: Medicinal use categories and number of taxa used to treat each category at Kopinang

Medicinal use	No. of families used	No. of genera used	No. of species used
Shampoo	1	1	1
Soap	1	1	1
Sore eyes	1	1	2
Sores	3	3	3
Thrush	2	2	2
Tonic	5	6	7
Whooping cough	3	3	3
Wounds	2	2	2

Appendix 8

Table 161: Medicinal use categories and number of taxa used to treat each category at Waipa

Medicinal use	No. of families used	No. of genera used	No. of species used
Abortion	1	1	1
Analgesic	5	5	6
Anti-arthritic	3	3	4
Anti-asthmatic	5	5	5
Anti-conjunctivitis	1	1	1
Anti-depressant	1	1	1
Anti-dermatosis	13	13	10
Anti-diabetic	2	2	2
Anti-diarrheal	10	13	16
Anti-drooling	1	1	1
Anti-dysenteric	4	4	8
Anti-fungal	11	13	15
Anti-helminthic	2	2	2
Anti-herpetic	4	4	6
Antihistamine	2	2	2
Anti-hypertensive	2	2	2
Anti-infective	16	17	18
Anti-inflammatory	7	7	7
Anti-irritant	2	2	2
Anti-malarial	11	13	15
Anti-menorrhagic	1	1	1

Continued: Medicinal use categories and number of taxa used to treat each category at Waipa

Medicinal use	No. of families used	No. of genera used	No. of species used
Anti-pruritic	10	11	11
Anti-pyretic	11	12	13
Anti-tuberculosis	1	1	1
Anti-ulcerogenic	1	2	2
Anti-venom	4	4	4
Antibacterial	4	4	5
Antiseptic	10	12	13
Back pain	4	4	4
Biliousness	3	3	4
Bones	1	1	1
Bronchitis	2	2	2
Burns	1	1	1
Bush yaws	8	9	9
Chicken pox	7	8	9
Cleaning bladder	2	2	2
Cold sweat	4	4	5
Colds	1	1	1
Coughing	11	12	12
Cracked heels	2	3	3
Cramps (women)	1	1	2
Cuts and wounds	8	9	10
Dermatosis	10	9	11

Continued: Medicinal use categories and number of taxa used to treat each category at Waipa

Medicinal use	No. of families used	No. of genera used	No. of species used
Decongestant	1	2	2
Detergent	1	1	1
Diuretic	1	1	1
Dye	2	2	2
Ear infections	1	1	2
Eczema	9	9	9
Emetic	1	1	1
Emollient	7	7	7
Fish poison	3	3	4
Gound itch	1	1	1
Hepatitis	1	1	1
Herbal bath	9	9	9
Incense	1	2	3
Insect repellent	1	1	1
Insecticide	3	3	3
Laxative	2	1	2
Influenza	2	2	2
Infertility (women)	1	1	1
Itchy scalp	1	1	1
Jaundice	2	2	2
Lotta	1	1	1
Measles	7	8	9

Continued: Medicinal use categories and number of taxa used to treat each category at Waipa

Medicinal use	No. of families used	No. of genera used	No. of species used
Muscle aches and pain	6	6	10
Poison	3	3	3
Rheumatism	1	1	1
Ringworm	6	6	6
Shampoo	1	1	1
Skin irritatant	2	2	2
Sore eyes	5	5	5
Sore throat	1	1	1
Sores	14	14	14
Sprains	2	2	2
Stimulant	1	1	1
Sunburn	1	1	1
Syphilis	2	2	2
Tonic	8	8	8
Thrush	1	1	1
Toothache	3	3	3
Whooping cough	5	5	1
Yeast infection	1	1	1

Appendix 9

Wildlife of Region 8

Birds:

Family Alcedinidae

- Ceryle alcyon* - Belted kingfisher
- Ceryle torquata* - Ringed kingfisher
- Chloroceryle aenea* - Pygmy kingfisher
- Chloroceryle amazona* - Amazon kingfisher
- Chloroceryle americana* - Green kingfisher
- Chloroceryle inadei* - Green and rufous kingfisher.

Family Anatidae

- Amazonetta brasiliensis* –Brazilian teal
- Anas discors* – Blue-winged teal
- Cairina moschata* – Muscovy duck
- Dendrocygna autumnalis* – Black-bellied tree duck
- Dendrocygna bicolor* – Fulvous tree duck
- Dendrocygna viduta* – White-faced tree duck
- Neochen jubatus* – Orinoco goose
- Oxyura dominica* – Masked duck
- Sarkidornis melanotos* – Comb duck

Family Anhingidae

- Anhinga anhinga* – Anhinga

Family Aramididae

- Aramus guarauna* Limpkin

Family Ardeidae

- Agamia agami* – Chestnut-bellied heron
- Ardea cocoi* – White-necked heron

Continued: Wildlife of Region 8

Botaurus pinnatus -- (Pinnated bittern)

Bubulcus ibis -- (Cattle egret)

Butorides striatus -- Striated heron

Butorides virescens -- Green heron

Casmerodius albus -- Great egret

Egretta thula -- Snowy egret

Florida caerula -- Little blue heron

Hydranassa tricolor -- Tricolored heron

Ixobrychus exilis -- Least bittern

Ixobrychus involucris -- Stripe-backed heron

Nyctanassa violacea -- Yellow crowned night heron

Nycticorax nycticorax -- Black crowned night heron

Pilherodius pileatus -- Capped heron

Tigrisoma lineatum -- Rufescent tiger-heron

Zebrilus undularis -- Zigzag heron

Charadriidae

Belanopterus cayennensis -- Southern lapwing

Ciconiidae

Euxenura galeata -- Maguari Stork

Jabiru mycheria -- Jabiru

Cochleariidae

Cochlearius cochlearius -- Boat-billed heron

Decipitridae

Heterospizias meridionalis -- Savanna Hawk

Letinea plumlea -- Plumbeous kite

Rostrhamus sociabilis -- Snail kite

Continued: Wildlife of Region 8**Eurypgidae***Eurypga helias* -- Sun bittern**Heliornithidae***Heliornis fulica* -- Sun grebe**Hirundinidae***Tachycinera albiventer* -- White-winged swallow**Jacanidae***Jacana jacana* -- Wattled jacana**Opisthocomidae***Opisthocomus hoazin* -- Hoatzin**Podicipidae***Podilymbus podiceps* -- Pied-bellied grebe*Podiceps dominicus* -- Least grebe**Phalacrocoracidae***Phalacrocorax olivaceus* -- Neotropic cormorant**Rallidae***Amayrolimnas concolor* -- Uniform Crake*Aramides axillaris* -- Rufous-necked wood-rail*Aramides cajanea* -- Gray-necked wood rail*Gallinula chloropus* -- Common gallinule*Laterallis exilis* -- Gray-breasted crake*Laterallis viridis* -- Russet-crowned crake*Micropygia schomburgkii* - Ocellated crake*Porphyryla flavirostris* -- Little gallinule*Porphyryla martinica* -- Purple gallinule*Porzana ablicollis* -- Ash-throated crake

Continued: Wildlife of Region 8

Porzana carolina -- Sara rail

Porzana flaviventer -- Yellow-breasted crane

Rallus longirostris -- Clapper rail

Scolopacidae

Bartramia longicauda -- Upland plover

Gallinago gallinago -- Common snipe

Gallinago undulata -- Giant snipe

Threskiornithidae

Ajaja ajaja -- Roseate spoonbill

Cercibis oxycera -- Sharp-tailed ibis

Edocimus ruber -- Scarlet ibis

Hycheria americana -- Wood ibis

Mesembrinibis cayennensis -- Green ibis

Phimosus infuscatus -- Bare-faced ibis

Theresticus caudatus -- Buff-necked ibis

Tyrannidae

Arundicola leucocephala -- White-headed marsh tyrant

Fluvicola pica -- Pied water tyrant

Mammals:**Carnivora****Felidae**

Panthera onca -- Jaguar

Mustelidae

Pteroneura brasiliensis -- Giant otter

Lutra longicaudis -- River otter

Continued: Wildlife of Region 8**Cervidae**

Mazama americana -- Red-bracketed forest deer

Mazama ganazoubira -- Gray-bracketed forest deer

Odocoileus virginianus -- Savannah deer

Cetacea**Delphinidae**

Sotalia guianensis -- Gray dolphin

Platanistidae

Inia geoffrensis -- Pink river dolphin

Chiroptera**Noctilionidae**

Noctilio leporinus -- Fish-eating bat

Hydrochaeridae

Hydrochaeris hydrochaeris -- capybara

Marsupialia**Didelphidae**

Chironectes minimus -- water opossum

Perissodactyla**Tapiridae**

Tapirus terrestris -- tapir

Primates**Cebidae**

Alouatta seniculus -- Howler monkey

Rodentia**Agoutidae**

Agouti paca -- Labba (paca)

Continued: Wildlife of Region 8**Sirenia****Trichechidae**

Trichechus manatus -- West Indian manatee

Tayassuidae

Tayassu pecari -- White-lipped peccary

Tayassu angulatus -- Collared peccary

Glossary

Antiseptic: an agent that inhibits the growth of harmful microorganisms.

Arthritis: an inflammation of the joints, accompanied by pain and swelling.

Asthma: a condition characterized by difficulty in breathing accompanied by spasm of the respiratory apparatus or by swelling of the mucous membrane.

Athlete's foot: a fungus infection of the skin of the feet, occasionally involving the hands as well, characterized by itching, scaling, cracking or blistering of the skin.

Diuretic: an agent which increases the secretion of urine.

Dysentery: an intestinal infection characterized by diarrhea, often bloody, pain and fever.

Eczema: inflamed skin, with itching, burning, crusting, scaling or pustules.

Edema: an excessive accumulation of tissue fluid in localised tissue.

Hepatitis: inflammation of the liver, usually accompanied by jaundice and fever.

Hypertension: abnormally high blood pressure.

Jaundice: yellow skin caused by an abundance of bile in the tissue, as a result of the liver's inability to process bile.

Pruritic: a severe itching of the skin.

Pyretic: feverish.

Rheumatism: a condition characterized by inflammation, soreness and stiffness in muscles and pain in associated structures.

Ringworm: a fungal skin disease in which itchy, scaly, circular patches appear on the

skin.

Sore: an ulcer or open lesion on the skin.

Thrush: infection of the mouth by the fungus *Candida albicans* characterized by crying and irritation.

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