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An ethnobotanical survey of medicinal plants used in the Siwai and Buin districts of the Autonomous Region of Bougainville

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Abstract

Ethnopharmacological relevance—Traditional knowledge of medicinal plant use in many regions of Papua New Guinea and the Autonomous Region of Bougainville is poorly described and rapidly disappearing. A program initiated by the University of Papua New Guinea to systematically document and preserve traditional knowledge of medicinal plant use was initiated with WHO help in 2001.

Aim of the study—To document and compare medicinal plant use in the Siwai and Buin Districts of the Island of Bougainville. Siwai and Buin districts represent two adjacent geographic regions of differing language traditions.

Materials and methods—This report is a combination of two University of Papua New Guinea reports generated using a University of Papua New Guinea and Papua New Guinea Department of Health approved survey questionnaire “Information sheet on traditional herbal reparations and medicinal plants of Papua New Guinea”.

Results—Although Siwai and Buin Districts are adjacent in Southern Bougainville, there is considerable variation in the specific plants used medicinally and the specific uses of those plants that are used commonly in the two regions. In addition, many of the plants used in the region are widely distributed species that are used medicinally in other settings. Nevertheless, the high endemicity of plants and the extraordinary cultural diversity in the Autonomous Region of Bougainville has yielded description of the medicinal use of many plants that have not previously been reported in the wider scientific literature.

Conclusions—Efforts to document and preserve traditional knowledge of plant use in Papua New Guinea have yielded important new records of plants with potential application in the provision of health care for a developing nation with an under developed Western style rural health care system. This report documents substantial commonality in the general modes of medicinal plant preparation and in the health care applications of plant use in the Siwai and Buin

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Conflict of Interest

All authors declare they have no conflict of interest concerning the work reported here.

traditions, however, there was considerable difference noted in the particular uses of the specific plants used in one or another of the districts.

Keywords

Papua New Guinea; Autonomous Region of Bougainville; Siwai; Buin Medicinal plant survey

1. Introduction

Papua New Guinea (PNG) is extraordinarily rich in plant and cultural diversity. PNG is a geographically segregated mountainous nation of at least 800 ethnic traditions and languages (Asher, 1994; Grimes, 2000). This geology has also resulted in isolated ecosystems and extraordinary biological diversity. PNG is home to an estimated 15,000 to 20,000 vascular plants with approximately 60% endemicity (Beehler, 1993; Mittermeier et al., 1997). Initially settled around 40,000 years ago, extended habitation in diverse environs has rendered most ethnic groups in PNG rich in medicinal plant knowledge (National Department of Health, 2007). The traditional use of medicinal plants constitutes an important and threatened information reservoir that has been empirically tested and adopted through millennia of trial and error, but that is threatened by on-going development and change of lifestyle. Prior to the current University of Papua New Guinea (UPNG) Traditional Medicines Database Surveys, two of which are reported here, PNG medicinal plant use and corresponding pharmacological assessment was not systematically studied. The documentation of medicinal plants in PNG has been haphazard and the accrued knowledge not widely disseminated internationally. We estimate that historically some 800 PNG plants have been described in the literature for treatment of various ailments, but this represents only a fraction of the total number of plants actually utilized.

The fact that a sizable majority of the PNG population relies on medicinal plants and traditional practitioners for health care has been formally recognized by the national government (National Department of Health, 2007). The PNG National Health Plan, 2001–2010, promoted collaboration between the World Health Organization (WHO) and UPNG to assist in the development of traditional medicines in the country. A traditional medicines survey questionnaire was developed using WHO guidelines. In 2001 the surveys initiated with approvals and endorsements from the UPNG School of Medicine and Health Sciences Research and Ethics Committee and the Medical Research and Advisory Committee of the PNG Department of Health. Also established at this time was a proprietary database for traditional medicines, maintained at UPNG (Rai, 2004), that now serves as a national resource as the government seeks to move validated and safe herbal remedies into the national health care formulary (National Department of Health, PNG, 2007).

Before the Bougainville crisis in 1989, Siwai and Buin Local Level Governments (LLG) of Southern Bougainville Island provided healthcare services commensurate with many other parts of Papua New Guinea. However, during the conflict, even those modest services were interrupted and the people of the region relied heavily upon medicinal plants to ameliorate illness. Now that Bougainville has gained autonomy, services are returning to the Districts of Siwai and Buin, even though the remaining separatist Mekamuui (Bougainville Resistance Army) forces intermittently interrupt travel within Southern Bougainville. With the return of services has come a perceptible loss of traditional knowledge concerning plant use as some of the elder herbalists pass away without transferring their knowledge or social role to heirs.

Bougainvillian languages include Austronesian, Papuan and Polynesian languages, and none of them are spoken by more than 20% of the total population (Bougainville, 2011). Siwai

and Buin are adjacent costal districts of Southern Bougainville Island characterized by a coastal lowland that extends inland to elevations of approximately 1,000 m. Most recent available data (National Research Institute, 2010) indicates the Siwai District is populated by approximately 14,000 Siwai language (also called Motuna; Summer Institute of Linguistics, 2010) speaking people. Buin District is populated by approximately 26,000 people, those interviewed for this work spoke North or South Mokeruui dialects of the Telei language (also called Terei, Buin, Rugara; Summer Institute of Linguistics, 2010). According to Regan (1998) only a rough estimate can be given for the total number of mutually unintelligible tongues spoken in the Solomon Islands and Bougainville, all the dialects described there would total “several times” more than 100 (Terrell, 1977). The Siwai and Telei languages are among those that are divided into dialects that are not necessarily mutually understandable (Bougainville, 2011).

Siwai and Telei are both considered Papuan in origin. The linguistic relationships of the Papuan languages are not easily established (Max Planck Research Group on Comparative Population Linguistics, 2009). The Papuan languages are thought to have descended from the first human habitation of the Bismarck Archipelago, about 35,000 BP. Recent assessment of structural phylogeny indicates common ancestry or ancient contact for the Papuan languages, while traditional linguistics indicates several different Papuan language families in the region. In any case, Siwai and Telei are considered to be in a related germinal family (Max Planck Research Group on Comparative Population Linguistics, 2009). Recently, Tok Pisin has become the principal language of trade for many in Siwai and Buin (Bougainville, 2011). The adoption of this common tongue will serve to increase relations amongst the two neighbors.

This work provides an opportunity to compare medicinal plant use in two poorly studied traditionally distinct populations that occupy closely located geographic regions.

2. Material and Methods

The UPNG initiated program to preserve traditional knowledge on plant use in PNG has become an effective training exercise for selected bachelor of pharmacy, and other, senior students. In addition to training in subjects relevant to herbal medicine use, students are trained to record new data concerning the specific uses of plants and specific cultural traditions within Papua New Guinea. The traditional medicines database now contains cultural plant use data from over 30 LLGs in PNG.

The medicinal plant survey questionnaire is titled “Information sheet on traditional herbal preparations and medicinal plants of Papua New Guinea”. To conduct the survey, students are trained in questionnaire administration, traditional medicines use, taxonomic nomenclature, herbarium specimen preparation, and instructed in the preservation and documentation of traditional knowledge and culture. The students are supported for a one year elective that includes travel to their home districts to conduct the surveys.

The survey in the Siwai LLG area was conducted in 2002, the survey in the Buin LLG area was conducted in 2006. Data were collected by two specially trained fourth year pharmacy students, working in their home communities and are presented in Table 1. Face to face interviews were conducted with locally acknowledged experts in medicinal plant use. These experts included herbalists (a patrilineal position in some villages in Southern Bougainville, which is noteworthy, because many aspects of society in Bougainville is matriarchal), general practitioners (both genders), birth attendants (females), bone setters and regular users of medicinal plants. In the Siwai region, 21 experts were interviewed in the Panakei, Konga, Motirui, Mamagota and Morohai villages; it was noted that in this region the

majority of those interviewed self-diagnosed and self-treated. In the Buin area, 17 experts were interviewed in the Turutai and Mongai villages, where there appeared to be a more formal hierarchy of recognized experts than was noted for the Siwai villages visited.

Photographs of the plants used medicinally by the herbal practitioners were taken at the time of interview and descriptions of plant morphology and habitat were recorded. Samples of the plants useful for identification (flowers, fruits or nuts, twigs with leaves) in addition to the parts used medicinally were harvested, dried and compressed in newspapers. Newspapers were changed daily until they remained dry after compression. Plants, photographs, and descriptions relevant to a specific plant were assigned a voucher number and returned to UPNG for identification by the Herbarium Staff. Mounted herbarium specimens were later deposited at the UPNG Herbarium for record and reference purposes.

Before the end of the scholastic year individual student authored reports were completed under supervision, as partial fulfillment of the requirements for the degree of Bachelor of Pharmacy. The data concerning plant use were also entered into the proprietary UPNG Traditional Medicines Database that records, in addition to plant medicinal use, information concerning source individuals and communities in order to recognize and trace the traditional knowledge intellectual property. Guidelines regulating benefit sharing for intellectual property and accession of the database have been developed at UPNG, operating under the current UPNG benefit sharing model, which is generic and applicable to many areas of natural products research. It includes guidelines concerning intellectual property rights and benefits sharing, and has been approved by the PNG government. The published student reports were the principal data sources for this report.

3. Results and Discussion

3.1 Diversity of plant use in Siwai and Buin

Diseases in southern Bougainville are often characterized as “normal” (common) illnesses, illnesses caused by spirits or illnesses caused by sorcery. The latter two categories of illnesses are often treated by spiritualists. No spiritualists were interviewed for this report; consequently the plant use described here focuses on common illnesses. Figure 1 shows the different disease conditions and the number of medicinal preparations used to combat them. The explicit use of various plants reflects, to some extent, the commonness of maladies. In Papua New Guinea respiratory problems, malaria and other infections, physical injury, diarrhea and obstetrical and gynecological difficulties are extremely common and many plants are used to treat these health problems.

Survey data presented in Table 1 include: voucher ID, plant family, genus and species, medical indication, plant part, mode of preparation, mode of application, village, local name/s and dialects, and habitat. Scientific data concerning cultural practices in Bougainville has been particularly hard to obtain because of the social disruption in the area for the last couple decades. This article illustrates several interesting points concerning medicinal plant use in Southern Bougainville. In the geographically neighboring areas of the Siwai and Buin language groups one would expect considerable overlap of plant use because of the presumed presence of common indigenous plants and because of the presumed historical dissemination of plant use knowledge. It is true that 18 of the 77 [23%] plants identified to species level from Siwai were also reported as medicinal in Buin. However, even with the apparent commonality in health conditions treated with plants (Figure 1), there was much less consistency in the specific uses of the plants than one might expect. Only *Psidium guajava* leaves and *Mikania micrantha* leaves were prepared the same way and used for the same indications in both Siwai and Buin. Additionally, only *Ficus adenosperma* was used in both areas for the same specific indication, and *Pterocarpus indicus* was the only other plant

prepared in similar fashion in both areas. Although these surveys were not intended to render exhaustive or complete lists of all plants used medicinally in the regions, the fact that the large majority of specific plant uses were not shared in common amongst the two regions was surprising.

3.2 Common practices in Siwai and Buin in plant preparation and application

Overall, similarities exist between the two communities in the reported methods of plant preparation, administration and plant parts used most frequently. Figure 2a shows that the percentage of plants prepared by various traditional methods is roughly similar in the Siwai and Buin. The notable exception to this observation is that concoction was reported as the most common method of preparation in Buin, while this category of preparation was not included in the Siwai report in which the methods of preparation were not consistently documented. Other methods of preparation including fresh plant leeching in water, direct application, heating, decoction and succus are frequently used in both locales. In both communities, oral consumption was reported to be the most common method of administration [Figure 2b]. In both communities, leaves were the most frequently used plant part, although the frequent use of other parts, particularly bark, was reported (Figure 2c). The majority of medicinal preparations reported used in these communities consist of one plant, the use of concoctions being less common.

3.3 Plants used both in Siwai and Buin

Of the 18 medicinal plants identified to species level that are reported as used medicinally in both Bougainville regions, six [33%] are also harvested or cultivated for food. These are *Barringtonia novae-hiberniae*, *Cocos nucifera*, *Ficus copiosa*, *Magnifera indica*, *Psidium guajava* and *Solanum torvum. Cocos*, (coconut), *Magnifera* (mango), *Psidium* (guava) and *Solanum* (turkey berry) have many reported medicinal uses in the literature. On the other hand, *B. novae-hiberniae* (cut nut) and *F. copiosa* (an edible fig) are not represented in widely available scientific literature for their medicinal uses. In Buin *B. novae-hiberniae* is used for arthritis and for angina in Siwai. In Milne Bay, PNG, an infusion of leaves of members of the *Barringtonia* genus is used to relieve stomach-ache (Holdsworth, 1977). *F. copiosa* is used for arthritis and malaria in Buin, in Siwai it is used for boils. Fresh fruit latex of *F. copiosa* is also used in East New Britain topically to treat boils (WHO, 2009), and its leaves are also crushed and rubbed on stomach to relieve stomachache (Holdsworth, 1977).

Other plants used medicinally in both the Buin and Siwai regional areas include *Ageratum conyzoides*, *Alstonia scholaris*, *Angiopteris evecta*, *Ficus adenosperma*, *Hibiscus tiliaceus*, *Hornstedtia scottiana*, *Macaranga aleuritoides*, *Merremia peltata*, *Mikania micrantha*, *Mucuna novoguineensis*, *Premna serratifolia*, and *Pterocarpus indicus. Ageratum conyzoides*, commonly known as billygoat weed, chick weed or white weed, is an invasive plant from South America; it is used worldwide orally and topically in variety of folk remedies (e.g., Tote et al., 2009 and Nour et al., 2101). In Buin it is taken orally for diarrhea and headache, in the Siwai area it is applied topically for earache. It is used elsewhere in PNG (Holdsworth, 1977) for diarrhoea (Oro Province and East New Britain) and topically on the forehead to treat headache (Manus Island and East New Britain). In addition, juice from moistened leaves is applied directly into sore eyes and it is used to stop vomiting in East New Britain (Holdsworth, 1977). Crushed leaf sap is used to treat head lice in other parts of PNG (WHO, 2009).

Alstonia scholaris is used in Bougainville to counter infertility (Buin) and to treat diarrhea (Siwai). An infusion of crushed boiled leaves is used in Central Province to treat cough, while on Normanby Island the stem sap is used for that same purpose (Holdsworth, 1977). Stem sap is also reported to be used elsewhere on Bougainville against fever and topically

for ulcers in Milne Bay. Bark is used in Central Province against malaria (Holdsworth, 1977). It is also used as a contraceptive (fresh leaves or abortifactant (dried bark sap) by women in other regions of PNG (WHO, 2009). *Alstonia scholaris* is a plant widely used in both India and China for numerous purposes including anti-diarrheal and anti-fertility (Arulmozhi et al., 2007).

Angiopteris evecta root is chewed for dysentery in the Buin area and its leaves are used to treat colds in the Siwai region. *Angiopteris evecta* extracts have been shown to have hypoglycemic effects in mice (Hoa et al., 2009).

Ficus adenosperma is used for fever in Buin and Siwai areas, it is also used in Buin to treat fear of death. The fresh root chewed for malaria in other parts of PNG; it has been introduced to Eastern Highlands from the Madang coast (Holdsworth, 1977).

Hibiscus tiliaceus is used to treat watery diarrhea in Buin but for productive cough in Siwai. A filtrate from bark scrapings is used against severe cough and tuberculosis in Manus Island (Holdsworth, 1977). Sap or decoction from leaves is drunk to cure sore throat in Sepik and Central Province, respectively (Holdsworth, 1977). Crushed young leaf sap used to facilitate childbirth in PNG (WHO, 2009) and in Vanuatu for menorrhagia (Bourdy and Walter, 1992).

There is little in the literature concerning *Hornstedtia scottiana*, a member of the ginger family that is found in eastern Papua New Guinea and northern Australia. In Buin it is applied topically for skin sores, backache and vomiting, in Siwai it is used topically and orally for labor pains.

Macaranga aleuritoides is used for breast abscesses in Buin and cuts in Siwai, it is found relatively widely in Papuasia but other specific medicinal uses are not reported in the literature. Bark from *Macaranga* sp. is used to treat cough and leaves have also been reported to be used for boils, bruises and headache elsewhere in Bougainville and in Milne Bay (Holdsworth, 1977).

Merremia peltata is a climbing vine that is an invasive species in many Pacific Islands (Leu, et, al., 2008, Bourdy and Walter, 1992). On Manus Island sap from stems is used to treat cuts, while young leaves are placed on sores to provide relief (Holdsworth, 1977). In Buin it is used for filariasis, elephantitis of scrotum, cut wounds, cough, fever, rhinitis (flu & cold), boils and centipede bites and in Siwai for eye inflammation and bullet wounds.

Mikania micrantha is another fast growing invasive vine species that is used to treat wounds in both Buin and Siwai, and also for ulcers in Buin. The stem is also used in a concoction against cold, headache and stomach aches in Eastern Highlands (Holdsworth, 1977). It is used for a wide variety of ailments in the Eastern and Western hemispheres. Antibacterial activity has been reported for it (Anupam et al., 2008) and antimicrobial constituents have been isolated from it (Facey et al., 1999).

There is little on *Mucuna novoguineensis* in the literature relevant to its medicinal use, although other members of the genus are used widely for a number of ailments. In the Buin region it is used variously for abdominal pain, constipation and loss of appetite, typhoid, and arthritis, in the Siwai area it is used to treat productive cough. *Mucuna* sp. are used to treat stomach ache (vine stem sap) and headache (root sap) in Sepik (Holdsworth, 1977).

Premna serratifolia is a medicinal plant used in many regions of the South Pacific (College of Micronesia, 2011, Desrivot et al., 2007). *P. integrafolia* is used variously for cough,

headaches and fevers in Sepik and on Normanby Island (Holdsworth, 1977). *Premna serratifolia* is used for headache and malaria in Buin and for dysentery in Siwai.

Pterocarpus indicus is a large tree common in much of Eastern Asia and the Southern Pacific. A cursory literature search of the CAPLUS® database reveals that it is used in a number of Chinese preparations for a variety of indications. Young leaves chewed in New Britain for stomach ache and in the Central Province leaves are boiled and the decoction drunk for malaria. Treatment of headache with flower infusion or with boiled leaf bath has also been documented in the Central Province (Holdsworth, 1977). In Milne Bay the bark is squeezed to release juice for topical administration into sores, and a leaf infusion is used to treat headache elsewhere in Bougainville (Holdsworth, 1977). *P. indicus* is used in Buin and Siwai for eye problems (including eye infections, blepharitis, stye and chalazion). In Buin it is also used for anemia, wounds, jaundice, and to induce labor. In Siwai it is also used for dysentery, haematouria, and centipede bite.

4. Conclusions

Bougainville's cultural distinctiveness is often attributed to different ethnic traditions and to matrilineal social structures (particularly concerning hereditary land rights; Connell, 2005). Douglas Oliver (as cited in Connell, 2005) has written that "nothing short of an encyclopedia could fully describe the great variety of social forms and religious practices of all the Solomons." Indeed, "marked tribal differences … spell despair for anyone seeking a simple formula for understanding the Solomonese as an entity." Almost universally throughout Southern Bougainville, rural people are subsistence farmers who reside in hamlets consisting of related families. Although "remarkably uniform" in settlement types, dress, diet and implements (Oliver, N.d.) the Bougainvillean cultures are far from uniform, with existing tensions between groups (A. Regan, 1998). According to Ogan (as cited by Regan, 1998) the "key differences are language, kinship and leadership systems". How the tribes distinguished amongst themselves was addressed by Nash and Ogen (1990): "The Nagovisi and Nasioi in precolonial times undoubtedly knew neighbors whose culture and language differed in some degree from their own." They "spoke of cultural differences distinguishing them from their neighbors", for instance "the excesses of rivalry and competition in feasting" among the Siwai. Historically, in Southern Bougainville there was no sense of the range of other ethnic groups, no recognition of other traditions as cultural entities, and no sense of Bougainville as a geographical entity.

Further dividing the ethnic groups in Bougainville was the intertribal warfare that prevailed nearly everywhere on the island until well after colonial contact (Douglas Oliver, N.d.). Intergroup fighting in Siwai continued into the 1920s and such conflict was within living memory of many groups in the 1980s (Regan). These overall perceptions paint a picture of functionally separate cultural traditions represented by the different language groups of Southern Bougainville.

Currently, the Siwai people remain deeply traditional. They value their customs and want them passed on to next generation. They speak dialects locally called Su'una'a and Pikei. Land is inherited through maternal lineage, as long a woman is living in the immediate family. A traditional gender dichotomy exists with women forbidden to wash upstream of men or to enter the "HausKaramut"- a ceremonial house for men and boys. In contemporary society shell money (shells of different colours and sizes), modern currency (Kina) as well as garden or store food is used to pay bride price. Recently, people are now moving close to roadside, Buka, the provincial capital being about 6 hours drive by road.

Currently the people of Buin District speak Telei, the lowland community speaking a dialect comprehensible to those inland. Although described as matriarchal in the early 1900s (Oliver, N.d.), Buin inhabitants claim to be a purely patrilineal society. Perhaps this transition to a patrilineal society has occurred recently, or perhaps the difference is semantic, as Oliver described for the Siwai (Oliver, 1949) where mechanisms did exist for a son to inherit his father's matrilineal land. Bride price mainly comprises of pigs, foodstuff and a smaller amount of cash than is common in other parts of PNG. Buin people are still largely rural, residing in villages. Only people in employment live in the towns. Transportation is mainly by passenger motor vehicles and most economic activity is concentrated in Buka about 8 hours drive by road from Buin. Before the crisis education was very important to Buin people, this is picking up again in the current peace.

We hypothesize that the historical cultural separation, in combination with variation in plant endemism, might explain the differences in the plants used and the spectrum of specific plant uses between the Siwai and the Buin regions. In fact, our observations mirror those of early explorers in that we document "remarkably uniform" in the diseases treated, the methods of medicinal plant preparation, mode of administration and plant parts used, while we see "marked tribal differences" in the individual plants used and their particular medical applications.

The medicinal plant surveys reported here are the product of collaboration amongst the faculty at UPNG with support provided by the University of Utah, the Fogarty International Centre of the NIH, USA (Barrows et al., 2009), and the PNG Ministry of Health. The survey reports represent university training exercises that are components of a larger integrated strategy that is under way to meet the health care needs of citizens of PNG. The traditional medicines survey project complements programs instituted by the PNG Ministry of Health to promote the use of efficacious herbal remedies amongst populations in need of health care intervention. The finding that the same plants can have radically different uses in locales separated by language, custom and geography reveals the need for information sharing amongst practitioners. The Department of Health Taskforce on Traditional Medicines has already facilitated traditional healer associations in several provinces and basic manuals on diagnosis and plant use have been drafted. The information gathered and preserved in the survey effort will ultimately contribute to a more integrated medical treatment spectrum, moving toward a combined health care approach that integrates effective and accessible traditional practices with Western protocols.

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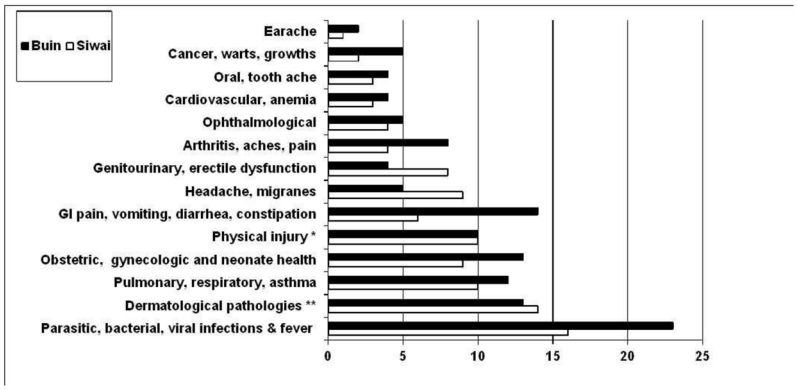

Figure 1.

Summary of common therapeutic indications for medicinal plants in the Siwai and Buin areas of Bougainville, grouped by organ system. Total number of plants: Siwai 100; Buin 90. In both areas many plants had multiple uses reported. * Includes: broken bones, sprains, dislocations, bruises, cuts. ** Includes: insect bites, stings, burns, itching, fungal infections, scabies, boils, sores, rashes, alopecia

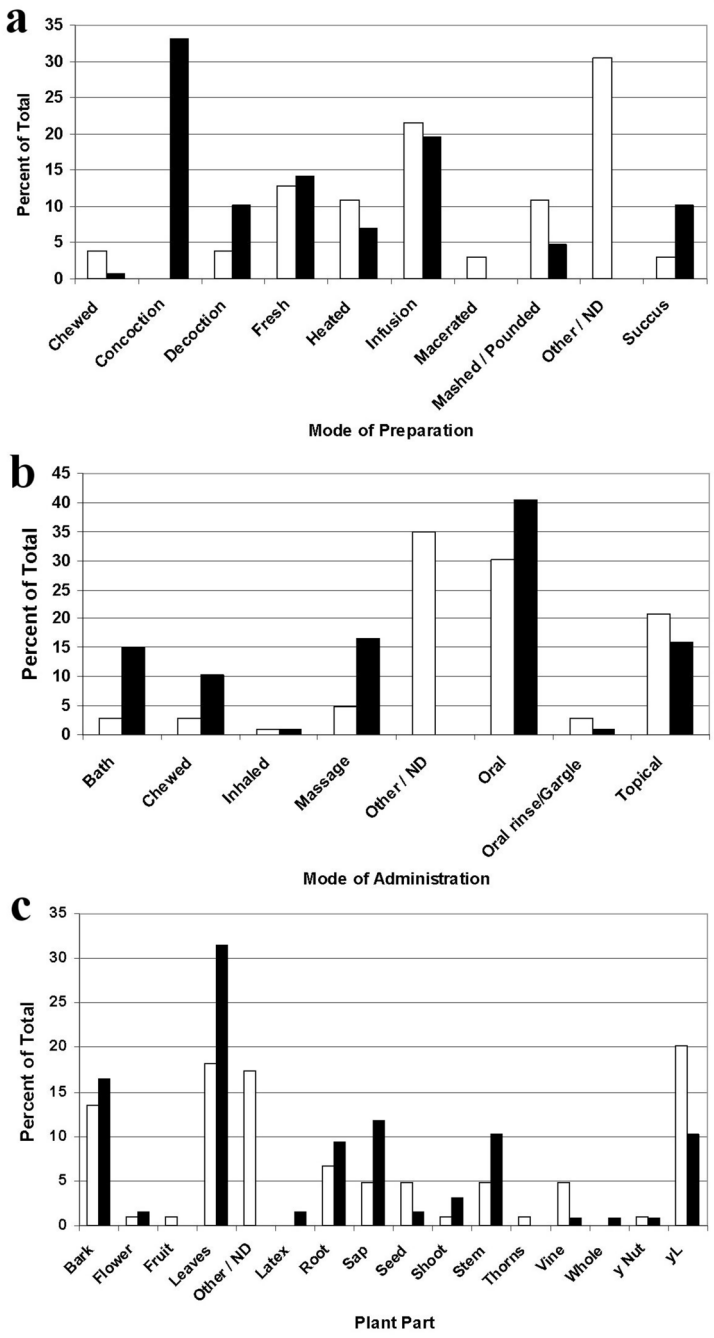

Figure 2.

Comparison of a) Mode of Preparation, b) Mode of Administration and c) Plant Part utilized between [□] Siwai and [■] Buin regions of the Bougainville Autonomous Region. ND: not determined.

Table 1

Summary of medicinal plant use data for Siwai (BS voucher numbers) and Buin (JW voucher numbers) areas of the Bougainville Autonomous Region

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
BS01	Polypodiaceae	*Christella arida* (D. Don) Holttum	Coagulant, wounds	yL	Mashed	Topical	P	Hahara	Grassland with few trees
BS02	Acanthaceae	*Graptophyllum pictum* (L.) Griff.	Pre-leprosy (rash called hisahisa)	L	Heated	Topical	P	Singarata	Cultivated
BS03	Zingiberaceae	*Alpinia sp.*	Blood clots after child birth	yL	Decoction	Oral	P	Irihih	Higher elevations, cultivated
BS04	Zingiberaceae	*Costus speciosus* Sm.	Sores; toothache	yL; Root	Heated and mashed; fresh	Topical	P	Mangmang	Abandoned gardens and grassland
BS05	Moraceae	*Ficus nodosa* Teijsm. & Binn.	Scabies	Bark	Infusion in coconut oil	ND	P	Nuung	Grassland and rainforest
BS06	Verbenaceae	*Premna serratifolia* L.	Dysentery	Bark	Infusion	Oral	P	Karuwana	Secondary forest
BS07	Dryopteridaceae	*Nephrolepis hirsutula* (Forst.) C. Presl	Angina pectoris	yL	Leaves heated and used to massage chest	Topical	ND	Kara-inho	Alongside rivers
BS08	Rubiaceae	*Uncaria sp.*	Severe to moderate cough	Vine (Sap)	Fresh	Oral	P	Rungkihi	Lowland and highland rainforest
BS09	Fabaceae	*Cassia alata* (L.)Roxb.	Skin fungus, herpes, eczema, ringworm, insect bites	L	Mashed, mixed with lime	Topical	P	A'aku-peero	Cultivated
BS10	Cyperaceae	*Cyperus* cf. *rotundus*	Toothache	Root	Infusion	Oral rinse	P	Pihrototoka honna	Reforested areas
BS11	Barringtoniaceae	*Barringtonia novae-hiberniae* Lauterb.	Angina pectoris	Bark	Infusion	Oral	P	Moriwo	Cultivated
BS12	Rosaceae	*Prunus gazelle-peninsulae* (Kaneh. & Hatus.) Kalkman	Headache	Bark	Infusion; fresh	Oral, topical on forehead	P	Lauru	Reforested areas and gardens
BS13	Malvaceae	*Hibiscus rosa-chinensis* L.	Eye infection	F	Flowers heated in coconut shells	Fumes into affected eye	P	Kukupih	Cultivated
BS14	Piperaceae	*Piper anisopleurum* C.DC.	Productive cough	yL	Infusion	Oral	P	Punpupuri'i	Secondary and primary forest
BS15	Urticaceae	*Elatostema sp.*	Productive cough	yL	Infusion	Oral	P	Simma'a	On stones in creeks
BS16	Asteraceae	*Wedelia biflora* (L.) DC.	Productive cough	yL	Infusion	Oral	P	Hunpo	Sandy riverbanks
BS17	Caesalpiniaceae	*Pterocarpus indicus* Willd.	Dysentery; haematouria; centipede bite; growth in the eye	Bark; Root; yL; Latex	Infusion; infusion; infusion; fresh	Oral; oral; oral; topical	P	Hondo	Secondary forest
BS18	Apocynaceae	*Alstonia scholaris* (L.) R. Br.	Dysentery, diarrhea	Bark	infusion	Oral	P	Kingiri	Primary and secondary forest
BS19	Lamiaceae	*Plectranthus scutellarioides* (L.) R. Br.	Headache and cough	yL	Infusion	Oral	P	Kapaatohi'i	Grass and shrubs
BS20	Urticaceae	*Leucosyke capitellata* Wedd.	Productive cough	L	Infusion	Oral	P	Isoiso	Secondary forest
BS21	Moraceae	*Artocarpus altilis* (Parkinson) Fosberg	Dysentery	Latex	Mixed with water	Oral	P	Kurako	Bushes, cultivated
BS22	Convolvulaceae	*Merremia peltata* (L.) Merr.	Eye inflammation; bullet wounds	y Shoot; Vine	Juice from new shoots applied; heated and blown into bullet wounds	Topical; topical	P	Hogouna	Widely distributed
BS23	Anacardiaceae	*Mangifera indica* L.	Severe itchiness of legs	Bark	Scraped and mixed with lime	Topical	P	Kongsi'i	Bushes

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
BS24	Moraceae	*Ficus semicordata* Buch.-Ham. ex Sm.	Headache and fever	yL	ND	Bath	P	Hituru	Reforested areas and rainforests
BS25	Malvaceae	*Hibiscus tiliaceus* L.	Productive cough	L	Mashed to release succus	Oral	P	Paruparu	Coastal thickets and stream banks, secondary forests
BS26	Zingiberaceae	*Alpinia sp.*	Diarrhea	Root	Fresh	Chewed	P	Pooraka	Fertile soil on high ground
BS27	Solanaceae	*Solanum torvum* Swartz, Prodr. 47. 1788.	Dry cough	yL	Mashed to release succus	Oral	P	Koroh	Abandoned garden sites
BS28	Zingiberaceae	*Hornstedtia scottiana* K. Schum.	Labor pains	Fruit	Fruit juice	Oral, topical on abdomen	P	I'isaru	Abandoned garden site and secondary forest
BS29	Lauraceae	*Cryptocarya sp.*	Ear infection	Bark	Macerated and resultant aroma blown into ear	Topical	P	Mukeni	Rainforests and mountainous places
BS30	Rubiaceae	*Morinda citrifolia* L.	Headache, body ache, painful ankles	Seed	Decoction	Oral	P	Ningto	Primary forest
BS31	Fabaceae	*Archidendron glabrum* (K. Schum.)Lauter b. & K. Schum.	Severe headache	yL	Pounded and resulting succus strained	Oral	P	Piimoki	Rainforest
BS32	Myrtaceae	*Psidium guajava* L.	Measles	yL	Decoction	Bath	P	ND	Cultivated
BS34	Gesneriaceae	*Aeschynanthus leptocladus* C.B. Clarke	Labour pains	yL	Mashed	ND	P	Runowai	Small shrub that grows on trees
BS35	Sterculiaceae	*Melochia odorata* L.f.	Dysuria	Root	Chewed with betel nut and lime	Chewed	P	Tamma	Secondary forest
BS37	Urticaceae	*Nothocnide melastomatifolia* (K. Schum.) Chew	Dysuria	yL	Infusion	Oral	P	Kamaarininano	On trees in the jungle
BS38	Euphorbiaceae	*Homalanthus Novoguineensis* (Warb.) K. Schum.	Body ache	ND	Succus	Oral	P	Tung	Abandoned gardens
BS39	Melastomataceae	*Melastoma malabathricum* L.	Baby when sick for the first time	yL	ND	Bath	P	Tupaainaraku	Abandoned garden sites with few trees
BS40	Fabaceae	*Derris grandifolia*	Constipation	ND	ND	ND	P	Kahani-ima	Rainforests
BS41	Asteraceae	*Mikania micrantha* Kunth	Wounds	yL	Squeezed in hands	Topical	P	Matapa	Secondary forest
BS43	Ranunculaceae	*Clematis sp.*	Headache	L	Mashed	Inhaled	ND	Humokung	Reforested areas and gardens
BS44	Thelypteridaceae	*Sphaerostephanos alatellus* (Christ) Holttum	Fever	ND	ND	ND	P	Uwahaku	Fern in moist areas
BS45	Urticaceae	*Pipturus argenteus* (G. Forst.) Wedd.	Leprosy	Seed	ND	ND	Mor	Ti'itipini-moi	Secondary forest
BS46	Rosaceae	*Rubus molucanus*	Pre-leprosy (rash called hisahisa)	Thorns	Thorns are used to poke red spots	Topical	P	Si'imu	Shrubs in reforested areas
BS47	Acanthaceae	*Hemigraphis sp.*	Scabies	L	ND	ND	P	Neeso	Rainforests
BS49	Zingiberaceae	*Alpinia unilateralis* B.L. Burtt & R.M.Sm.	Constipation	Stem (core)	Fresh	Chewed	M	Moge'e	Secondary forest
BS50	Fabaceae	*Mucuna gigantean* (Willd.)DC.	Cough and asthma	Stem	ND	ND	P	Aiya, Aiwa	Rainforest
BS51	Solanaceae	*Cyphomandra betacea* Sendt.	Burns	L	ND	ND	P	Hitukong or Iha-si'i	Gardens
BS52	Arecaceae/Palmae	*Areca novo-hibernica* Becc.	Boils	Bark	Chewed with lime	Massage on boil	P	Mu'usehu	Primary and secondary forest
BS54	Zingiberaceae	*Alpinia oceanica* Burkill	Constipation	Stem (core)	Macerated	Oral	P	Hara	Rainforest

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
BS55	Smilaceae	*Geitonoplesium cymosum* (R. Br.) A. Cunn. ex R.Br.	Scabies	L	Poultice	Topical	P	Pirigini	Rainforest
BS56	Moraceae	*Antiaris toxicara* Lesch.	Small growths	Seed	Heated	Oral	P	Kokui	Low and Highland forest
BS57	Moraceae	*Ficus adenosperma* Miq.	Fever	L	ND	ND	Mot	Turuwii	Highland rainforest
BS58	Sterculiaceae	*Melochia odorata* L.f.	Enlarged spleen	ND	ND	ND	K	Kiiro/Takara	Lowland rainforest
BS59	Poaceae	*Setaria palmifolia* (J. Koenig) Stapf, J. Linn. Soc., Bot. 42: 186. 1914.	Toothache	Root	ND	ND	P	Siruh	Grassland
BS60	NA	*Cytandra sp.*	Dysentery	ND	ND	ND	P	Toputopu	Muddy places
BS61	Euphorbiaceae	*Homalanthus novoguineensis* (Warb.) K. Schum.	Heartburn	Bark	Infusion	Oral	P	Hikumutu	Garden sites and secondary forest
BS62	Araceae	*Epipremnum pinnatum* (L.) Engl.	Bone fractures, dislocated joints, and sprains	Stem	Heated over fire, mashed	ND	P	Pongkiriri	Primary and secondary forest
BS63	Asteraceae	*Ageratum conyzoides* L.	Diarrhea and headache	L	Infusion	Oral	P	Mekosana or Rumahing	Garden weed
BS64	Euphorbiaceae	*Codiaeum variegatum* (L.) Blume	Dislocated joints	Root	Macerated	Massage	P	Nunotong	Cultivated
BS65	Apocynaceae	*Alstonia sp.*	Pain	L (Sap)	Fresh	Oral	P	Ponu	Secondary forest
BS66	Apocynaceae	*Alstonia spectabilis* R. Br.	Chest pain	Bark	ND	ND	P	Miru	Abandoned garden sites
BS67	Thelypteridaceae	*Sphaerostephanos sp.*	Labour	ND	ND	ND	Mot	Korokoro	Mountainside on riverside
BS68	Araceae	*Colocasia esculenta* (Linnaeus) Schott	Swollen breasts	L	Heated	Massage	P	Ki'ikata	Regrowth after grass is cut in cocoa plantations
BS69	Marattiaceae	*Marattia melanesica* Kuhn	Fever	ND	ND	ND	P	Tuiresi	Lowland and highland rainforest
BS70	Arecaceae	*Metroxylom sagu* Rottb.	Prevention of enlarged spleen in newborns	ND	ND	ND	P	Piia	Muddy places and cultivated
BS71	Moraceae	*Ficus copiosa* Steud.	Boils	Bark	Chewed with lime	Topical	P	Surosai	Reforested areas and bushes
BS72	Palmae	Unidentified	Boils	Bark	Chewed with lime	ND	P	Kingkirisu	Unfertile soil
BS73	Moraceae	*Ficus hispidioides* L.f.	Bone fractures, dislocated joints, and sprains	Seed	ND	ND	P	Su'usu'u	Secondary forest
BS74	Euphorbiaceae	*Macaranga aleuritoides* F. Muell.	Cuts	yL	Mashed to release succus	Topical	P	Maasiko	Secondary forest
BS75	Moraceae	*Ficus sp.*	Tongue cancer	Vine (Sap)	Fresh	Oral rinse	P	Kung	Grows on trees
BS76	Lauraceae	*Litsea calophyllantha* K. Schum.	Painful urination	ND	ND	ND	P	Kungko'	Lowland and highland rainforest
BS77	Lauraceae	*Cryptocarya sp.*	Painful urination	Bark	Bark scraped with water and strained	Oral	P	Rugeria or Tiwito	Lowland and highland rainforest
BS78	Smilacaceae	*Smilax latifolia* R. Br.	Fractures	Vine	Heated over fire and tied around fractures	Topical	P	Kowa'a	Rainforests
BS79	Marattiaceae	*Marattia fraxinea* Raddi	Centipede bite	ND	ND	ND	P	Kuhiiwa	Secondary and primary forest
BS80	Arecaceae	*Cocos nucifera* L.	Blood clots	y nut	Heated	Oral	P	Moo	Tropical climates

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
BS81	Poaceae	*Bambusa sp.*	Swollen testes	ND	ND	ND	P	Kutapaku	Moist areas of forest
BS82	Athyriaceae	*Diplazium proliferum* (Lam.) Thouars.	Painful urination	yL	Eaten fresh	Oral	P	Diriiko	Riverbanks
BS83	Rutaceae	*Evodia elleryana* F. Muell.	Fever	L	Mashed	Wash	P	Kurih	Rainforests
BS84	Marattiaceae	*Angiopteris evecta* (Forst.) Hoffm.	Cold	yL	Infusion	ND	M	Uwahaku	Fern in moist areas near village
BS85	Malvaceae	*Commersonia bartramia* (L.) Merr.	Pregnancy	L	ND (“extract”)	ND	P	Panoru	Secondary forest
BS87	Rubiaceae	*Myrmecodia echinata*	Labour	ND	ND	ND	P	Kuhro	Treetops
BS89	Lamiaceae	*Plectranthus scutellarioides* (L.) R. Br.	Leprosy	L	ND (“extract”)	ND	P	Mongko	Cultivated
BS90	Musaceae	*Musa paradisica* L.	Pre-leprosy rash	ND	ND	ND	P	Kouhrai-murih	Rainforest
BS91	Poaceae	*Bambusa sp.*	Pre-leprosy rash	ND	ND	ND	P	Pihi	Rainforest, cultivated
BS92	Aristolochiaceae	*Aristolochia tagala* Cham.	Headache	L	Pounded	Massage	P	Ku’ukuing paupau	Primary and secondary forest
BS93	Verbenaceae	*Vitex cofassus* Reinw. ex Blume	Centipede bite	ND	ND	ND	P	Muniing	Primary forest and undisturbed places
BS95	Euphorbiaceae	*Codiaeum variegatum* (L.) Blume	Leprosy	ND	ND	ND	P	Honno-Mung	Cultivated
BS96	Cyperaceae	*Cyperus rotundus* L.	Toothache	Stem	Pounded	Mouth wash	P	Pihirototoka-pehhita	Rainforested land
BS97	Verbenaceae	*Vitex trifolia* L.	Severe productive cough	L	Infusion	Oral	P	Tari-raapito	Rare
BS98	Leeaceae	*Leea indica* Merr.	Leprosy	S	ND	Topical	P	Kosi-Kasi	Thick rainforest
BS99	Vitaceae	*Cayratia sp.*	Centipede bite	Sap	Fresh	Topical	P	Pimuai	Abandoned garden sites
BS100	Moraceae	*Ficus wassa* Roxb.	Labour pains	ND	ND	ND	Moo	Masi	Weed grows in cocoa plantations
BS101	Myrtaceae	*Syzygium sp.*	Headache and fever	L	ND	ND	P	Turoro	Muddy places
BS106	Piperaceae	*Piper sp.*	Leprosy	B	ND	ND	P	Urugoto, Minawatong	On trees
BS107	Araliaceae	*Polycias sp.*	Pain	L	Heated	Massage	P	Kuhausi	Cultivated
BS108	Myrtaceae	*Syzygium sp.*	Tongue cancer	L	Decoction	ND	P	Nuuwaari	Rainforest
BS109	Fabaceae	*Mucuna novo-guineensis* Scheff.	Productive cough	ND	ND	ND	ND	Aiya, Aiwa	Rainforests
BSX3	Moraceae	*Ficus sp.*	Painful sore which swells up & exposes flesh	ND	ND	ND	P	Tupare	Grows on trees
BSX4	Fragraceae	*N.A.*	Fresh wound	yL	Mashed	Topical	P	Kipo	Secondary forest
BSX6	Asclepiadaceae	*Hoya sp.*	Problems with milk production in new mothers	Vine, L	Succus	Oral	P	Nunororu	Rainforest
JW01	Asteraceae	*Mikania micrantha* Kunth	Wounds and ulcers	L; Vine	Infusion; succus	Topical	PA	Kominis[1]	Abundant in secondary forest
JW02	Verbenaceae	*Premna serratifolia* L.	Headache; malaria	L; Bark	Decoction; fresh	Oral; massage	PA	Kaaru[1]	Widely distributed near village
JW03	Zingiberaceae	*Alpinia racemigera* F. Muell.	Cough, dysuria (UTI)	Stem	Succus (small amount of water added)	Oral	PA	Kokoru[1]	Forest, near village
JW04	Malvaceae	*Kleinhovia hospital* L.	Cough, dyspnea, asthma	yL	Infusion	Oral	PA	Paragi[1]	Forest

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
JW05	Musaceae	*Musa schizocarpa* Simmonds	Asthma	Latex	Fresh	Oral	PA	Nutai[1]	Forest
JW06	Anacardiaceae	*Mangifera indica* L.	Diarrhea; abdominal pain, constipation and loss of appetite (typhoid)	L; Bark	Decoction; infusion	Oral; Massage	PA	Paisi[1]	Forest
JW07	Arecaceae	*Areca catechu* L.	Cough	Bark	Infusion	Oral	PA	Kogi[1]	Cultivated, forest
JW08	Urticaceae	*Poikilospermum sp.*	Labor induction; boils	Sap	Succus; infusion	Oral; bath	PA	Kamairengke nano[1]	Crawling plant in forest
JW09	Marantaceae	*Donax cannaeformis* Rolfe	Filariasis	L; Stem	Heated; oncoction	Massage; oral	PA	Marita[1]	Widely distributed shrub
JW10	Costaceae	*Costus speciosus* Sm.	Filariasis; bullet wounds; pigs w/dog bite; tooth decay/ gingivitis	Stem; Stem; Stem; Root	Concoction; succus; succus after heating and crushing; fresh	Oral; topical; topical; chewed	PA	Memeto[1], Maiangata[2]	Forest
JW11	Convolvulaceae	*Merremia peltata* (L.) Merr.	Filariasis, elephantitis of scrotum; cut wounds, boils and centipede bites; Flu and cold; fever	Sap	Concoction; fresh; succus; infusion	Oral; topical; oral; bath	PA	Turaru[1]	Crawling vine
JW12	Convolvulaceae	*Merremia sp.*	Filariasis, elephantitis of scrotum and breast	Sap	Concoction	Oral	PA	Kakatanobi[1], Kogurotorogu[2]	Crawling vine
JW13	Myristicaceae	*Horsfieldia irya* Warb.	Watery diarrhea and stomach ache	Stem or Shoot	Fresh	Chewed	PA	Kamukamu[1]	Forest
JW14	Dioscoriaceae	*Dioscorea alata* L.	Hypertension, obesity, migraines, and consistent transient paralysis; pain & difficulty in urinating	Root	Decoction	Oral	PA	Husisi[1]	Crawling and climbing vine
JW15	Verbenaceae	*Faradaya splendida* F. Muell.	Pneumonia	Sap	Succus	Oral	PA	Kotomekai[1]	Crawling and climbing plant in forest
JW16	Piperaceae	*Piper sp.*	Centipede bite; cough; migraine	Stem; L; Stem	Succus; infusion; crushed	Topical; oral; inhaled	PA	Torunoki[1], Tururoki[2]	Crawling plant in cleared places, sides of tracks
JW17	Poaceae	*Bambusa sp.*	Permanent contraceptive	Root	Concoction	Oral	PA	Kutabagu[1]	Clearings
JW18	Moraceae	*Ficus adenosperma* Miq.	Phobic disorder and fever	yL	Concoction	Bath	PA	Turore[1]	Along riversides
JW19	Urticaceae	*Elatostema parasiticum* (Blume) Blume ex H. Schroet.	Phobic disorder and fever	L	Concoction	Bath	PA	Simaya[1]	Stones and riverbanks of Argura river
JW20	Fabaceae	*Cassia fistula* L.	Fungal skin infections (Grille)	L	Crushed to release succus	Topical	PA	Ombuu[1]	Near village
JW21	Gnetaceae	*Gnetum costatum* K. Schum.	Otitis media	Sap	Fresh	Topical	PA	Akamu[1]	A climbing vine in forest
JW22	Zingiberaceae	*Alpinia peekelii* Valeton	Migraines; cough	Stem/Shoot	Infusion; infusion (w/little water)	Bath; oral	PA	Kangkuruu[1], Rauraunu[2]	Forest
JW23	Marattiaceae	*Angiopteris evecta* (Forst.) Hoffm.	Dysentery	Root	Concoction	Chewed	PA	Morosi[1]	Forest fern
JW24	Commelinaceae	*Commelina paleata* Hassk.	Conjunctivitis	L	Succus	Topical	PA	Utamoitai[2]	Moist areas along Argura river
JW25	Davalliaceae	*Davallia solida* (G. Forst.) Sw.	Scurvy (gingivitis)	Stem	Infusion	Gargle	PA	Raaka[1]	Creeping plant grows on shady trees
JW26	Aspleniaceae	*Asplenium nidus* L.	Fire leaf burns	yL	Crushed	Massage	PA	Rokobo[1]	Forest on trees with rough bark

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
JW27	Sapindaceae	*Harpullia sp.*	Paralysis, migraine, asthma	yL; Bark	Decoction; infusion	Oral	PA	Korukopuu[1]	Forest
JW28	Zingiberaceae	*Alpinia sp.*	Hemetemesis	Rhz	Fresh	Chewed	PA	Pagana[1]	Cultivates
JW29	Blechnaceae	*Stenochlaena palustris* (Burm.) Bedd.	Sore and red eyes with discharge	L	Decoction	Topical, bath	PA	Nabata[1]	Creeping plant on forest trees
JW30	Poaceae	*Paspalum sp.*	Toothache	Root	Fresh	Chewed	PA	Kaino[1]	Wild in cocoa plantations
JW31	Palmae	*Ptychosperma kasesa* Lauertb.	For permanent contraceptive	Shoot; Root	Chewed with betelnut; concoction	Chewed; oral	PA	Mikituku[4]	Forest
JW32	Anacardiaceae	*Semecarpus sp.*	Permanent contraceptive/Abortion	Bark; Root	Infusion; concoction	Oral	PA	Nannai potuoramiu[1]	Forest
JW33	Poaceae	*Paspalum conjugatum* Bergius	Centipede bite	L	Concoction	Topical	PA	Masi[1]	Forest
JW34	Verbenaceae	*Clerodendrum fragrans*	Centipede bite; dysuria (UTI)	Sap	Concoction; succus	Topical; oral	PA	Kurumu[3]	Crawling and climbing plant in clearings and along roadsides
JW35	Piperaceae	*Piper peekelii* C.CD.	Malaria	L	Fresh	Massage	PA	Urugu[1]	Crawling plant in forest
JW36	Annonaceae	*Cananga odorata* (Lam.) Hook. f. and Thomson	Malaria	L	Fresh	Massage	PA	Rauro[1]	Rainforest Orukuu
JW37	Euphorbiaceae	*Macaranga sp*	Induction of labor	Bark (sap)	Sap added to water	Oral	PA	Pauru[1]	Forest
JW38	Moraceae	*Ficus copiosa* Steud.	Backache (arthritis) and malaria	Bark; Bark & L	Infusion; concoction	Oral, bath	PA	Tunanai[1], Tuarai[1]	Forest, clearings
JW39	Zingiberaceae	*Alpinia modesta* K. Schum.	Dysentery; planar wart	Root	Concoction; concoction	Chewed; topical	PA	Kumugu[3]	Widely distributed in light forest
JW40	Agariaceae	*Agaricus sp*	Plantar wart	Whole	Heated	Topical	PA	Kantoki[1]	Dry coconut fronds, moist dead wood
JW41	Zingiberaceae	*Hornstedtia scottiana* K. Schum.	Boils, sores and ulcers, vomiting and arthritis (backache)	Seed; L	Fresh; heated	Topical, massage	PA	Asiaru[1], Gorgor[P]	Common shrub near villages
JW42	Orchidaceae	*Grammatophyllum scriptum* (L.) Blume	For mothers who delivered but not lactating	Stem	Crushed and squeezed to release succus	Oral	PA	Paarai[1]	On trees, wild and cultivated
JW43	Lauraceae	*Cryptocarya apamaefolia* Gamble	Headache	Bark	Fresh	Massage	PA	Kabakuu[1]	Korukoguoto bau forest
JW44	Selaginellaceae	*Selaginella cirnum*	Centipede bite	L	Infusion	Oral	PA	Kamago[1]	Korukoguoto bao forest
JW45	Verbenaceae	*Geunsia sp.*	Hemetemesis	Bark	Succus	Oral	PA	Tomarai[1]	Light, bushy areas of forest
JW46	Flacourticaceae	*Homalium foetidum* Benth.	Malaria and Jaundice	Bark, L	Concoction	Bath	PA	Misiagiro[1]	Forest
JW47	Loganiaceae	*Fagraea obovata* Griff.	Malaria	L	Concoction	Bath	PA	Ketupore[1]	Forest
JW48	Anacardiaceae	*Semecarpus abenscens*	Anemia (jaundice) ; (gun) wound healing	L; Sap	Concoction; concoction	Oral	PA	Uramiu[1]	Lowland forest and cleared areas
JW49	Fabaceae	*Pterocarpus indicus* Willd.	Anemia; wounds/bleeding; induce labor; eye infections	yL; yL; yL; Shoot & yL	Concoction; concoction; infusion; squeezed gently	Oral; oral; oral; topical	PA	Okino[1]	Forest
JW50	Arecaceae/Palmae	*Cocos nucifera* L.	Injury wounds	unripe nut juice	Boiled	Oral	PA	Muuo[1], Kokonas[P]	Cultvated
JW51	Chrysobalanaceae	*Cyclandrophora laurina* (A. Gray) Kosterm.	Bone fractures	Bark	Concoction	Chewed, massage	Mon	Osito[5], Sito[1]	Forest
JW52	Sapindaceae	*Pometia pinnata* J.R. Forst. and G. Forst.	Bone fractures; heat rashes	Bark, L	Concoction; infusion	Chewed, massage; bath	Mon	Mougoru[1]	Forest

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
JW53	Gnetaceae	*Gnetum gnemon* L.	Bone fractures	Bark	Concoction	Massage	Mon	Aara[5]	Forest
JW54	Araceae	*Colocasia esculenta* (Linnaeus) Schott	Used after delivery to shrink fundus	L	Decoction	Oral	Mon	Utukau[1]	Forest in moist cleared areas
JW55	Myrtaceae	*Psidium guajava* L.	Chicken pox and measles; alcohol intoxication; rhinitis	yL	Decoction; fresh; fresh	Bath; oral; chewed	PA	Kuopa[1]	Cultivated
JW56	Caricaceae	*Carica papaya* L.	Malaria; cough; hypertension	L; Seed; F & yL	Decoction; infusion; decoction	Oral	Mon	Kaioke[5], Porpor[1]	Cultivated
JW57	Lecythidaceae	*Barringtonia novae-hiberniae* Lauterb.	Arthritis	Bark	Concoction	Chewed	Mon	Aiai kuii[5], Pau[P]	Cultivated
JW58	Arecaceae	*Gronophyllum chaunostachys* (Burret) H.E. Moore	Backache (arthritis)	Bark	Concoction	Chewed	Mon	Kiritu[5]	Forest and cultivated
JW59	Myrtaceae	*Syzygium malaccense* (Linnaeus) Merrill and L. M. Perry	Productive cough	yL	Succus	Oral	PA	Karikau[1], Raurau[5], Laulau[P]	Cultivated
JW60	Leeaceae	*Leea sp.*	Conjunctivitis	L	Heated	Massage	PA	Marakakas[1]	Abandoned gardens
JW61	Fabaceae	*Mucuna novo-guineensis* Scheff.	Abdominal pain, constipation and loss of appetite (typhoid) and arthritis	Sap	Concoction	Massage, oral	PA	Mosimosi[1]	A crawling vine in rainforest and moist areas
JW62	Anacardiaceae	*Semecarpus sp.*	Malaria	Bark	Concoction	Bath	Mon	Innepuu[5]	Rainforest
JW63	Fabaceae	*Vigra sp.*	Malaria	Sap	Concoction	Bath	Mon	Pirigiamoro[1], Pirigianomu[5]	Forest vine on trees
JW64	Lamiaceae	*Coleus scutellarioides* (L.) Benth.	Malaria	L	Concoction	Bath	Mon	Meme[5]	Newly cleared areas
JW65	Solanaceae	*Solanum torvum* Swartz	Malaria	L	Concoction	Bath	Mon	Kabatokopau[5]	New clearings and gardens
JW66	Rubiaceae	*Uncaria sp.*	Abdominal pain, constipation and loss of appetite (typhoid) and arthritis	Bark	Concoction	Massage, oral	PA	Morokengke Kata[1]	Forest along rivers
JW67	Zingiberaceae	*Alpinia sp.*	Malaria	L	Concoction	Bath	Mon	Nokio[5]	Forest near village
JW68	Euphorbiaceae	*Macaranga aleuritoides* F. Muell.	Breast abscess	L	Heated	Massage	PA	Apapai[1]	Newly cleared areas or lowland forest
JW69	Araceae	*Alocasia sp.*	Centipede bite, fire leaf burn, jellyfish sting	Stem	Scraped, mixed with lime	Topical	PA	Orukuu[5]	Abundant in forest along riverbanks
JW70	Araliaceae	*Osmoxylon micranthum* (Harms) Philipson	Abortion	Bark	Decoction	Oral	Mon	Potumai[5]	Forest
JW71	Apocynaceae	*Alstonia scholaris* (L.) R. Br.	Infertility (female); cough	Root; Sap	Succus; water added to sap	Oral	Mon	Kenumau[5]	Forest
JW72	Moraceae	*Ficus botryocarpa* Miq.	Menorrhagia	L	Infusion	Oral	PA	Innina[1]	Forest, clearings
JW73	Myrtaceae	*Syzygium sp.*	Diarrhea, cough, alopecia, malnutrition and anemia	Bark	Decoction	Oral	Mon	Paguau[5], Karapurinio[5], Kukuma[1]	Forest, and cultivated
JW74	Flagellariaceae	*Flagellaria indica* L.	Conjunctivitis	Sap, L	Fresh; heated	Topical, massage	Mon	Kere[1], Kereku[5]	A vine in Forest
JW75	Malvaceae	*Hibiscus manihot* L.	To facilitate quick delivery for an expecting mother	L	Infusion	Oral	Mon	Markuii[5], Aibika[P]	Cultivated
JW76	Malvaceae	*Hibiscus tiliaceus*	Watery diarrhea	L	Infusion	Oral	Mon	Bambaruu[5], Wild mangas[P]	Cultivated

Voucher	Family	Genus & Species	Condition or Disease	Part	Preparation	Application	village	local name	Habitat
JW77	Passifloraceae	*Passiflora foetida* L.	Cough	yL	Infusion	Oral	PA	Ropu[1]	Creeping vine in low cleared or grassy areas, along roads and rivers
JW78	Fabaceae	*Mimosa pudica* L.	Injury swelling	L	Fresh	Massage	Mon	Pamparagansi [5]	Along roads
JW79	Malvaceae	*Sida rhombifolia* L.	Toothache; helps baby learn to walk quickly; erectile dysfunction	Stem; Root; Root	Fresh, concoction; concoction	Chewed; massage; massage	Mon	Tugia[2], Broomstick[P]	Along roads and highways
JW80	Poaceae	*Eleusine indica* L.	Erectile dysfunction	Root	Concoction	Massage	Mon	Unsigu[5]	Margin or cleared areas, roads
JW81	Urticaceae	*Pipturus sp.*	Diabetes	yL	Infusion	Oral	Mon	Kutope[1]	Forest
JW82	Leguminosae	*Albizia falcataria* (L.) Fosberg.	Chicken pox	Bark	Concoction	Bath	Mon	Kugupina[2]	Clearings
JW83	Mimosoideae	*Albizia sp.*	Chicken pox	Bark	Concoction	Bath	Mon	Tugurugu[2]	Clearings
JW84	Asteraceae	*Ageratum conyzoides* L.	Very painful earache (otalgia)	L	Heated and crushed to release succus	Topical	Mon	Aurai[5]	A weed in clearings/gardens
JW85	Amaryllidaceae	*Crinum asiaticum* L.	Heart burn	L	Decoction	Oral	PA	Poga[1]	Cultivated
JW86	Zingiberaceae	*Zingiber officinale* Roscoe	Centipede bite; abdominal pain, constipation and loss of appetite (typhoid)	Rhz	Crushed; concoction	Topical; oral, massage	PA	Piriani[1], Iaa[2]	Cultivated
JW87	Fabaceae	*Derris sp.*	Abdominal pain, constipation and loss of appetite (typhoid) and arthritis	Sap	Concoction	Massage, oral	PA	Ubaipokaruka u[1]	Rainforest climbing vine
JW88	Palmae	*Calamus hollrungii* Becc.	Diarrhea, abdominal pain, constipation and loss of appetite (typhoid)	Sap	Concoction	Massage, oral	PA	Kanta[1]	Cane plant grows well in forest
JW89	Saurauiaceae	*Saurauia sp.*	Abdominal pain, constipation and loss of appetite (typhoid) and arthritis	F	Concoction	Massage, oral	PA	Ararum[1]	Forest
JW90	Rutaceae	*Euodia hortensis* J. R. & G. Forst	Deeps cuts and wounds	L	Heated	Topical	PA	Siusiu[1], Temo[1]	Cultivated

The following shorthand notations were used:

Plant part : F =Flower; L = Leaves; Rhz = Rhizome; y = young/new, S = Seeds.

Village - Buin, South Bougainville: PA – Pariai, Mon=Mongai; Siwai District, Bougainville: M= Motirui; Moo = Mo'o kupu, P- Panakei, K – Kapana, Mor – Morohai.

Local name - Siwai Language: no superscript; Telei Dialect: 1=North Mokeruui, 2=Central Mokeruui, 3=Kungara, 4=Mokeruui, 5=South Mokeruui. Common Language: P=Pidgin.

Multiple uses for Condition or Disease; When separated by semicolons Part, Preparations and Applications are respectively matched (sequentially mapped).

Concoction=a combination of herbs, decoction=extraction by boiling, succus=expressed juice, infusion=steeping of plants in water.