CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Tropical AgriSciences

Analysis of present status of ethnopharmacological research in Papua New Guinea: review of literature

BACHELOR THESIS

Prague 2018

Author:

Aneta Gregorová

Chief supervisor:

Prof. Ing. Ladislav Kokoška, PhD.

Declaration

I hereby declare that I have done this thesis entitled Analysis of present status of ethnopharmacological research in Papua New Guinea: review of literature independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague 20. 4. 2018

Aneta Gregorová

Acknowledgements

I would like to thank my thesis advisor, Prof. Ing. Ladislav Kokoška, PhD. (Department of Crop Sciences and Agroforestry, Faculty of Tropical Agrisciences, Czech University of Life Sciences Prague) for his suggestions and guidance on the aspects of my research.

Author's abstract

Analysis of present status of ethnopharmacological research in Papua New Guinea: review of literature.

The aim of this study was to analyse literature data on plants used in folk medicine of different regions in Papua New Guinea. To research and compare articles throughout different databases to compare which regions are searched for medicinal plants the most and more importantly, which are the least. The importance of the least explored regions is for a future possible field research to identify plants we may not know and also ethnobotanicals of which we do not know that there is a possible ethnopharmacological use. The main output of work are summarised ethnobotanical data such as scientific and local names, synonyms and families, parts and traditional way of use of selected plants.

Key words: ethnobotany, ethnopharmacy, Papua New Guinea, medicinal plants, folk medicine

Contents

Introduction

1 Papua New Guinea

It is generally known, that Melanesia have a rich tradition in plant based medicine, especially Papua New Guinea, where there are over 7000 cultural groups of which most of them have different approach to healing wounds and curing various diseases. Because of the large number of species, the island of Papua New Guinea is poorly explored.

Another reason is that most of these cultural groups or tribes are closed from public world and do not trust non-family members of society with their ethnopharmacological knowledge. These information are passed on from generation to generation, mostly on a women's line and traditional healers, known as shamans. However, there was a research done in Papua New Guinea in 1981 in which 97% of respondents in large household survey said, they regularly used the dokta, that is the Pidgin term for physicians, medical orderlies and broadly all outsiders who treat illness. 45% said they no longer use shamans for healing (Herdt, 1989). This enormous change can be interpreted as increasing acculturations and decline from traditional shamanism.

Nevertheless it still means, most people are selecting traditional medicine over a conventional one. Papuan people in the most remote parts of the country do not have a much choice than to turn on to a traditional healer if it is a shaman, dokta or any other kind.

In Papua New Guinea there is a large importance of traditional medicine. Up to 80% of population use traditional, mostly herbal, medicine and therapies (Rai, 2014) instead of the conventional one. One of many reasons is that there is a large tradition of tribes and traditional healers, that predominate till this day.

Traditional medicine is also an important part of the health system in Papua officially. The Government of PNG adopted the "National Policy on Traditional Medicine" in 20071. The policy should improve quality and delivery of folk medicine and its practices and ways of identification and integrating folk medicine into the

[1] National Policy on Traditional Medicine. National Departement of Health, Waigani, NCD, Papua New Guinea. 2007.

country’s health care system. Traditional healers are authorized to practice at villages and its surroundings.

Indeed traditional healers and medicinal plants have become important health resources in rural areas, particularly where aid posts and health centres have closed. The use of traditional medicine is very much part of the lives of local communities.

Aims

The aim of this study is to analyse literature data on plants used in folk medicine of different regions in Papua New Guinea. To research and compare articles throughout different databases to compare which regions are searched for medicinal plants the most and more importantly, which are the least. The importance of the least explored regions is for a future possible field research to identify plants we may not know and also ethnobotanicals of which we do not know that there is a possible ethnopharmacological use. The main output of work are summarised ethnobotanical data such as scientific and local names, synonyms and families, parts and traditional way of use of selected plants.

Materials and Methods

A systematic literature review using databases, such as World Health Organisation, Web of Knowledge, Google Scholar, PubMed, National Center for Biotechnology Information. Also due to a manual search of relevant journals, textbooks, and bibliographies. Primary search terms used were ‘medicinal plant’ ‘ethnobotany’ ‘Papua New Guinea’. The web-based database of International Plant Name Index was used to determine the correct scientific names of the selected plants.

Results

Table 1: Results of the article research				
	Province	**No. of studies**	**No. of species**	**references**
1.	Bougainville (autonomous region)	2	190	
2.	Central	4		
3.	Chimbu (Simbu)	1		
4.	East New Britain	1		
5.	East Sepik	1	205	Koch et al., 2015
6.	Eastern Highlands	1	213	Jorim et. al., 2012
7.	Enga	0		
8.	Gulf	0		
9.	Hela	0		
10.	Jiwaka	0		
11.	Madang	0		
12.	Manus	4		
13.	Milne Bay	1	30	P.P. Rai, 2009
14.	Morobe	2		
15.	National Capital District	0		
16.	New Ireland	8		
17.	Northern (Oro Province)	0		
18.	Southern Highlands	0		
19.	West New Britain	3		
20.	West Sepik (Sandaun)	0		
21.	Western Highlands	1		
22.	Western Province (Fly)	4		

Table 2: Most common medicinal plants in Papua New Guinea

No.	Scientific name	Synonyms (Plant list)	Family	Local name	Part used	Preparation form	Traditional use	References
1	*Alstonia scholaris*	Echites scholaris	Apocynaceae	Kingiri	bark	decoction	infertility, diarrhoea, fever	Holdsworth 1977
2	*Angiopteris evecta*	Polypodium evectum	Marattiaceae	Uwahaku, Yarchapa	root, young leaves	crushed, infusion	cold, dysertery, shortness of breath	Hoa et al., 2009
3	*Ficus adenosperma*	Ficus deltoidea	Moraceae	Belloki, Turuwii	leaves	crushed, cut	fever, wound, diarrhoea	Tote et al., 2009 Holdsworth, 1977
4	*Hibiscus tiliaceus*	Talipariti tiliaceum	Malvaceae	Bambaruu, Wild mangas	leaves	infusion	diarrhoea, cough	Tote et al., 2009 Holdsworth, 1977
5	*Hornstedtia scottiana*	Cardamomum scottii, Amomum lycostomum	Zingiberaceae	Asiaru, Gorgor	fruit	fruit juice	labour pain, skin sores, backache, vomiting	Tote et al., 2009 Holdsworth, 1977
6	*Macaranga aleuritoides*	Macaranga riparia	Euphorbiaceae	Maasiko	young leaves, bark	mashed to released succus	cuts, breast abscess, cough, boils, bruises, headache	Holdsworth, 1977
7	*Merremia peltata*	Convolvulus bufalinus, Ipomoea nymphaefolia	Convolvulaceae	Turaru, Aukut, Bangpuk, Nangumareng	sap, leaves	heated, crushed	filariasis, elephantitis, cut wounds, cough, fever, rhinitis, boils, centipede	Tote et al., 2009, Nour et al., 2011

							bites, eye inflammation and bullet wounds	
8	*Mikania micrantha*	Willoughbya micrantha	Asteraceae	Matapa	leaves young	squeezed in hands	ulcer, wound, headache, stomach ache	Holdsworth, 1977 Anupam et al., 2008
9	*Psidium guajava*	Myrtus guajava, Psidium cujavus	Myrtaceae		leaves	decoction	measles	Holdsworth, 1977
10	*Pterocarpus indicus*	Echinodiscus echinatus	Fabaceae (Leguminoseae)	Markulu, Hondo, Moroho, Okino	sap, bark, root, leaves young	crushed, infusion	anaemia, dysentery, diarrhoea	Tote et al., 2009 Holdsworth, 1977
11	*Mucuna novo-guineensis*	Mucuna kraetkei, Mucuna lenticellosa	Fabaceae	Aiya, Aiwa, Kilemiesik	root	crushed	abdominal pain, constipation, loss of appetite, typhoid, arthritis, shortness of breath	Holdsworth, 1977
12	*Premna serratifolia*	Citharexylum paniculatum, Gumira integrifolia, Premna arborea	Lamiaceae	Kunggwia, Kaaru	seed, leaves, bark	decoction, fresh	headache, malaria, dysentery	Holdsworth, 1977

Conclusion

There is a rich tradition in natural healing practices in plant based medicine in Papua New Guinea and a large part of what we do not know. This part is consisted mostly of mediterranean provinces on mainland such as Enga, Gulf, Hela, Jiwaka, Madang, Oro, Sandaun, Simbu and Southern Highlands.

References

Waruruaia J, Sipanaa B, Kochb M, Barrowsb LR, Teatulohi K., Matainahoa, Rai PP. 2011. An ethnobotanical survey of medicinal plants used in the Siwai and Buin districts of the Autonomous Region of Bougainville. Journal of Ethnopharmacology 138(2): 564–577.

WHO. 2009. Medicinal Plants In Papua New Guinea. WHO Western Pacific Regional Publications. Manila. 172p.

Holdsworth DK. 1977. Medicinal Plants of Papua New Guinea, South Pacific Commission Technical paper No.175, Noumea.

Koch M, Kehop DA, Kinminja B, Sabak M, Wavimbukie G, Barrows KM, Matainaho TK, Barrows LR, Rai PP. 2015. An ethnobotanical survey of medicinal plants used in the East Sepik province of Papua New Guinea. Journal of Ethnobiology and Ethnomedicine. 11: 79.

Rai PP. 2014. Status Of Medicinal And Aromatic Plants In Papua New Guinea: A Review. Pacific Journal of Medical Sciences. 12(2): 66 – 80.

Herdt GH. 1989. Doktas and Shamans Among the Sambia of Papua New Guinea. A Continuing Trial of Treatment. Springer. Dordrecht. 95-114 .

Blackwood B. 1939. Use of plants among the Kukukuku of Southeast-Central New Guinea. In Proceedings of the sixth Pacific Science Congress of the Pacific Science association. University of California Press. 1939:111–126.

Jorim RY, Korape S, Legu W, Koch M, Barrows LR, Matainaho TK, Rai PP. 2012. An ethnobotanical survey of medicinal plants used in the eastern highlands of Papua New Guinea. Journal of Ethnobiology and Ethnomedicine. 8 (47): 1-17.