



Ethnomedicinal uses of plants by the Sama Bangingi of Tumulutab Island, Zamboanga City

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Abstract

This study was conducted in Tumulutab Island, Zamboanga City. It aimed to establish the qualitative profile of medicinal plants used as ethnomedicinal practices of the Sama Bangingi group in Tumulutab Island, Zamboanga City. The collection of data was done from December 2021 to January 2022. Purposive sampling was utilized as sampling method. A survey was conducted to establish the quantitative profile, interview and semi-structured questionnaires were utilized. The collection and identification of plants were pressed and mounted using the herbarium techniques and the validation of identified plant species was verified after. Thirty (30) medicinal plants were cited by the respondents, eleven (11) families were identified. This indicates that leaves (60%) are the most part of the plant used for treatment, followed by roots (16%), bark (10%), whole plant (11%) and flower (3%). The top three mode of preparation being used by the Sama Bangingi tribe are decoction (73%), pounding (11%), and infusion (10%). The mode of administration is as follow; wherein drinking has (75%) marks the highest number of modes of preparation followed by applying the plant as poultice (21%), and applying it externally (4%). Researchers suggested that to explore the potential of medicinal plants used by the Sama Bangingi tribe by performing In vitro assays to assess the potential therapeutic effects of the components present in each medicinal plant.

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Introduction

The use of medicinal plants begins during the early days were instinctive, similar case with animals. Until the advent of iatrochemistry in 16th century, plants had been the source of treatment and prophylaxis. Decreasing efficacy of synthetic drugs and increasing contraindications make the usage of natural drugs topical again (Petrovska, 2012). According to the World Health Organization (2003), 80% of the estimated population depends exclusively on plants for health and healing. Medical plants abound in nature. Since most of them are available and easily accessible, these medicines are more affordable compared to synthetic drugs. Medicinal plants give benefits to indigenous people, especially in the remote areas. Thus, various plants are utilized as remedies for ailments by the ethnic groups in the Philippines.

Ethnomedicine refers to the study of traditional medical practice which is concerned with the cultural interpretation of health, disease and illness & also addresses the healthcare seeking process and healing practices. The practice of Ethnomedicine is a complex multidisciplinary system constituting the use of plants as primary health care for the people since millennia (Amuthavalluvan, 2011). Traditional and folk medicines have served as the means of immediate therapy to maintain the health of people living in such dispersed island areas, and the conservation of ethnobotanical knowledge is becoming increasingly important (Abe and Ohtani, 2013). The use of plants by indigenous peoples all over the world has been underreported and this prevents the scientific community from benefiting from traditional knowledge which has taken centuries to develop in the form we know them today. Nowadays, indigenous knowledge on medicinal plants is fast diminishing because as more plants are lost, so is the knowledge of their value to humanity (Ducusin, 2017). As Dapar and Alejandro (2020) claims, there is a possible loss of the traditional practices due to absence of verbal communication, decline interest, migration for education, and other related reasons. Traditional practices thus, are eroding from generation to generation, or at least, varying in time.

The flora utilized by the Sama Bangingi group is not exempted to the rule of using the medicinal plants. The Sama Bangingi is one of the indigenous groups that are found in Zamboanga City. This group believe in the superstitions that elemental creatures and forefathers attribute to the sickness of the islander. So, the tribe seeks help from the “magtatawal” which resort to the use of plants as medicine. The Sama Bangingi in Tumulutab Island are geographically separated from those located in the mainland of Zamboanga City. Tumulutab Island is 40 km away from the downtown of Zamboanga City via boat. Since the island is far from the main city, medical facilities are inadequate and doctors and other health professionals are their last alternative. Just as speciation can occur due to geographical isolation, so too can the practices of certain groups particularly on the use of medicinal plants.

So far, ethnomedicinal studies that were done focused more on the descriptive part. Those done on the Sama Bangingi, especially here in Region IX for example, settled more only on the qualitative aspect of the study, like which plants, plant parts are used to treat which ailments, as well as mode of application. Therefore, it is here where the gap exists. There are few studies on medicinal plants, but none of them was conducted on the Sama Bangingi, and certainly not in the island of Tumulutab. In this study the researchers established an ethnomedicinal study of plants used by the Sama Bangingi in the island of Tumulutab, Zamboanga City, in treating ailments. For that reason, this study could provide data for future evaluation of pharmacological and clinical screening.

Materials and methods

The study site

This study was conducted at Tumulutab Island, Zamboanga City. Tumulutab is one of the barangays in Zamboanga City with the coordinates of 6.9546 N, 122.3262 E. This is an isolated island with only one (1) health center as limited source of medical needs of the residents there. Fig. 1 shows the location of Tumulutab, Island, in the map of the Philippines.

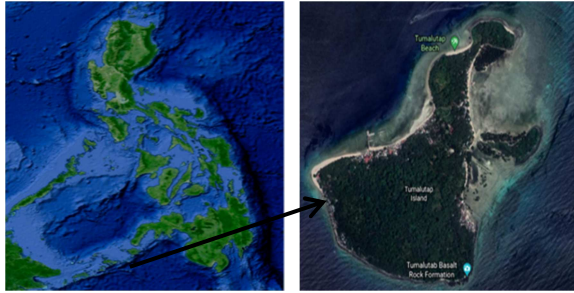


Fig. 1. Location of Tumulutab Island

Research sample

An adapted method was employed where the Purposive Sampling was utilized as. Fifty (50) healers who had utilized medicinal plants in treating diseases for a year and of legal age (Gruyal *et al.*, 2014) were identified as key informants.

Research design

Descriptive research design was utilized in this study. It allowed the researchers to describe systematically and accurately the facts and characteristics of a given population or area of interest, to provide an accurate portrayal or account of characteristics of a particular individual, situation or group. These studies are a means of discovering new meaning, describing what exists, determining the frequency with which something occurs and/or categorizing information (Dulock, 2015).

Research procedure

Clearance for the study

The researchers obtained ethical clearance from the Western Mindanao State University-Research ethical Oversight Committee (WMSU-REOC) in Zamboanga City. Written permission from the barangay captain and the IPMR were also acquired. The National Commission on Indigenous People (NCIP) clearance was received in accordance with the NCIP administrative order no. 1 series of 2012. "Researchers/project proponents shall file with the concerned regional office the accomplished application form and abided by this Guidelines and/or other requirements." Furthermore, on the day of data collection from key informants, a free-prior informed consent form was read to them, which they were required to sign before being considered informants.

Ethnomedicinal survey

To determine the qualitative profile of medicinal plants used, the researchers conducted individual interviews and administered a semi-structured questionnaire to Sama Bangingi who were of legal age. It was written in Tausug dialect and translated by a resident of Tumulutab Island, Zamboanga City. The questions are based on traditional healing practices using medicinal plants, the specific part of a plant, mode of preparation, its admission and ailments being treated by medicinal plants in the island of Tumulutab, Zamboanga City (Table 1).

Collection and identification of plants

Samples of the medicinal plants were collected with the help of the barangay officials of the island. Then the collected plants were pressed and mounted on Herbarium sheets following the Herbarium techniques. These specimens served as vouchers or representative samples of the plants identified as medicinal plants that the Sama Bangingi utilize and deposited at the Department of Biological Sciences of Western Mindanao State University. The vernacular/local names of the specimens were referred to the Dictionary of Philippines Plant Names. All the scientific names were checked for their spelling, synonyms and family classification using The Plant List (The Plant List, 2013), World Flora Online (WFO, 2019), the International Plant Names Index (IPNI, 2019) and Tropicos (Tropicos, 2019). The occurrence, distribution, and latest species identification were further confirmed in the updated Co's Digital Flora of the Philippines. Lastly, the validation of the identified plants species was done by the botanist from Jose Vera Santos Memorial Herbarium (PUH) of University of the Philippines Diliman.

Data analysis

Frequency was used to determine which among the plants species and ailments are frequently used and treated. Percentage was used to compare the quantity of the cited parts used, preparation, mode of administration of the Sama Bangingi healers. Social Demography of informants, traditional medicinal practices was then tabulated.

Table 1. Traditional practices of medicinal plants

Scientific Name	Common Name	Indigenous Name	Parts used	Preparation	Mode of Administration	Ailment
<i>Acanthaceae</i> <i>Andrographis paniculata</i> Nees	Bitterweed	Pait-pait	Roots Leaves	Decoction Infusion	Drinking	Diarrhea Acid Reflux, Cancer Malaria
<i>Annonaceae</i> <i>Annona muricata</i> L.	Guyabano	Labanos	Leaves	Decoction	Drinking	High blood
<i>Apiaceae</i> <i>Centella asiatica</i> (L.) Urban	Asiatic Penny	Pang-gaga	Leaves	Infusion	Drink and Apply as Poultice	Fever
<i>Asparagaceae</i> <i>Dracaena trifasciata</i> (Prain) Mabb.	Snake plant	Espada-espada	Leaves	Pounding	Apply as Poultice	Snake Bite
<i>Asteraceae</i> <i>Artemisia indica</i> Willd.	Tite pati	Sta. Maria	Leaves	Decoction	Drinking	Menstrual Cramp
<i>Blumea balsamifera</i> (L.) DC.	Sambong	Lakdanbulan	Leaves Roots	Decoction	Drinking Apply as Poultice Drinking	High blood, Kidney pain, Ulcer Arthritis Tuberculosis
<i>Calophyllaceae</i> <i>Calophyllum inophyllum</i> L.	Alexandrian laurel/ mastwood	Dangkalan	Leaves	Infusion	Apply to Poultice	Sore Eyes
<i>Costaceae</i> <i>Costus woodsonii</i> Maas	Red button ginger	Jubul- jubul	Leaves Flower	Infusion Pounding	Ingesting Apply as Poultice	High blood, Diabetes Cancer
<i>Crassulaceae</i> <i>Kalanchoe pinnata</i> (Lam.) Pers.	Life plant/ miracle leaf	Lapak- Lapak	Leaves	Pounding Infusion	Apply as Poultice Drinking	Fever, Malaria, Typhoid fever, Migraine Tuberculosis
<i>Euphorbiaceae</i> <i>Euphorbia hirta</i> L.	Hairy Spurge	Patik- patik	Whole Plant	Decoction	Drinking	Dengue, Flu, Fever, Malaria
<i>Jatropha curcas</i> L.	Physic nut	Tangan-Tangan	Leaves Bark	Infusion Decoction	Apply as Poultice Apply as Poultice	Dislocation Ear Infection
<i>Fabaceae</i> <i>Flemingia strobilifera</i> (L.) R.Br.	Wild hops	Gaan- gaan	Leaves Roots	Decoction	Drinking	Stomachache Acquired immunodeficiency Syndrome, Gas pain Urinary Tract Infection
<i>Mimosa pudica</i> L.	Sensitive plan	Sipug- sipug	Roots	Decoction	Drinking	
<i>Lamiaceae</i> <i>Coleus amboinicus</i> Lour.	Mexican mint	Bildo	Leaves	Decoction/ Pounding	Drinking	Cough
<i>Coleus scutellarioides</i> (L.) Benth.	Painted Nettle	Mayana	Leaves	Infusion	Drinking	Tuberculosis
<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Horehound	Bawing-bawing	Leaves Roots	Extraction Decoction	Drinking Apply as Poultice Drinking	Ulcer Headache Stomachache, Diarrhea
<i>Orthosiphon aristatus</i> (Blume) Miq.	Java tea	Dahon-dahon	Leaves	Infusion	Drinking	High blood
<i>Vitex negundo</i> L.	Chinese chastetree	Lagundi	Leaves	Decoction	Drinking	Cough
<i>Malvaceae</i>						

<i>Hibiscus rosa-sinensis</i> L.	China-rose	Gumamela	Flower	Pounding	Apply as Poultice	Boils
<i>Sida acuta</i> Burm.f.	Common wireweed	Sinagawli	Roots	Decoction	Drinking	Male Impotence, Fever
<i>Urena lobata</i> L.	Bur mallow	Daupang	Roots	Decoction	Drinking	Rashes, Allergy Sterility Stomachache
			Leaves			
<i>Menispermaceae</i>						
<i>Tinospora crispa</i> (L.) Hook.f. & Thomson	Heart leaved moonseed	Pitawali	Leaves/ Bark Bark/ Roots	Decoction/ Pounding Drinking	Drinking/ Apply as Poultice Drinking	Allergy Diabetes
<i>Moraceae</i>						
<i>Artocarpus heterophyllus</i> Lam	Jackfruit	Nangka	Bark	Decoction	Drinking	Urinary Tract Infection
<i>Moringaceae</i>						
<i>Moringa oleifera</i> Lam	Moringa	Malunggay	Leaves	Decoction	Drinking	Anemia
<i>Myrtaceae</i>						
<i>Psidium guajava</i> L.	Guava	Bayabas	Leaves	Decoction	Apply externally/ Apply as Poultice Apply externally Drinking	Wound Circumcision Antiseptic Fever, Rashes Cough Diarrhea
				Decoction/ Extraction		
			Roots	Decoction		Ulcer
<i>Piperaceae</i>						
<i>Peperomia pellucida</i> (L.) Kunth	Pepper Elder	Lansang-Lansang	Leaves	Decoction Infusion Pounding	Drinking Drinking Apply as Poultice	High blood Fever, Flu Wound
<i>Poaceae</i>						
<i>Cymbopogon citratus</i> (DC.) Stapf	West Indian Lemon Grass	Say	Root	Decoction	Drinking	High blood
<i>Rubiaceae</i>						
<i>Morinda citrifolia</i> L.	Indian Mulberry	Bangkuru	Leaves	Roasting Infusion	Apply as Poultice	High blood Fever
<i>Sapotaceae</i>						
<i>Chrysophyllum cainito</i> L.	Star apple	Istarepol	Bark	Decoction	Drinking	Urinary Tract Infection, Diarrhea
<i>Verbenaceae</i>						
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Blue porter weed	Bilu- bilu	Leaves	Infusion/ Pounding Decoction	Apply as Poultice Drinking	Wound Stomachache
			Roots	Decoction		Mouth Ulcer, Cough

Results and discussion

Demographic profile

The Table 2 below shoes that demographic characteristics of the informants wherein Eighty-two percent (82%) were female and eighteen percent (18%) were males, the majority number of informants were ages 25-64 years old (78%), followed by 65 and over years old (20%), and 24 years old (2%). The educational attainment of the informants, most of the informants have none or no educational attainment

(60%), followed by elementary (20%), high school (14%) and college (6%). Lastly, for the civil status of the informants, most of our informants are widowed (74%), followed by married (22%) and lastly single (4%).

The family that has the highest number of medicinal plants used is *Lamiaceae*. As stated by Raja (2012) medical constituents of *Lamiaceae* includes the strong aromatic essential oil, tannins, saponins and

organic acids. Plants that are included in this family has sedative, diuretic, tonic, antispasmodic and antiseptic properties. A very important compound in herbs of *Lamiaceae* family is rosmarinic acid (Capecka *et al.*, 2004), and as supported by Skekarchi *et al.* (2012) Rosmarinic acid is a phenolic compound which is found in many genera of Lamiaceae and exhibits important biological activities such as antioxidant, anti-inflammatory, anti-allergic, anti-depression, anti-hyperglycemic and antimicrobial. The most common health problems being experienced by the Sama Bangingi tribe in the island of Tumulutab are cough, fever, high blood, diarrhea, and dengue. Due to lack of health care facilities, the health seeking behavior of the Sama Bangingi residing in the island of Tumulutab is affected. Phytotherapy is the use of plant materials to prevent and treat ill health or promote wellness. The practice dates to antiquity, yet remains current (Ameh *et al.*, 2010). According to Madjos and Luceño (2019), natural products which taken from medicinal plants are potential sources of human drugs. Therefore, it is empirical that the indigenous people including the Sama Bangingi of Tumulutab Island Zamboanga City use medicinal plants for different illnesses.

Table 2. Demographic characteristics of informants

Baseline characteristic	Full sample	
	n	%
Gender		
Male	9	18%
Female	41	82%
Age		
24	1	2%
25-64	39	78%
65 and above	10	20%
Educational attainments		
None	30	60%
Elementary	10	20%
High school	7	14%
College	3	6%
Civil status		
Single	2	4%
Married	11	22%
Widowed	37	74%

Note. N= 50 Informants

As shown in Table 3, *P. guajava* L. (25) gathered the highest number of plants cited in the area and followed by *E. hirta* L. (16).

Table 3. The number of informants that cited the medicinal plant species as medicine for different ailments from Tumulutab Island, Zamboanga City

Medicinal Plants	Number of informants
<i>P. guajava</i> L.	25
<i>E. hirta</i> L.	16
<i>A. muricata</i> L.	7
<i>B. balsamifera</i> (L.) DC	6
<i>S. jamaicensis</i> (L.) Vahl	6
<i>T. crispa</i> (L.) Hook.f. & Thomson	6
<i>V. negundo</i> L.	6
<i>A. paniculata</i> Nees	5
<i>J. curcas</i> L.	5
<i>M. suaveolens</i> (L.) Kuntze	5
<i>P. pellucida</i> (L.) Kunth	5
<i>C. amboinicus</i> Lour.	4
<i>C. woodsonii</i> Maas	4
<i>K. pinnata</i> (Lam.) Pers.	4
<i>S. acuta</i> Burm.f.	4
<i>U. lobata</i> L.	4
<i>C. cainito</i> L.	3
<i>F. strobilifera</i> (L.) R.Br.	3
<i>M. citrifolia</i> L.	3
<i>A. indica</i> Willd.	2
<i>C. inophyllum</i> L.	2
<i>C. asiatica</i> (L.) Urban	2
<i>H. rosa-sinensis</i> L.	2
<i>M. oleifera</i> Lam	2
<i>A. heterophyllum</i> Lam	1
<i>C. scutellarioides</i> (L.) Benth.	1
<i>C. citratus</i> (DC.) Stapf	1
<i>D. trifasciata</i> (Prain) Mabb.	1
<i>M. pudica</i> L.	1
<i>O. aristatus</i> (Blume) Miq.	1

Table 4. The number of ailments cited in Tumulutab Island, Zamboanga City

Ailments	Number of ailment
Cough	21
Fever	14
Highblood	13
Diarrhea	11
Dengue	9
Stomachache	4
Wound	4
Allergy	4
Ear infection	4
Ulcer	3
Circumcision Antiseptic	3
Rashes	3
Urinary Tract Infection	3
Cancer	3
Diabetes	3
Malaria	3
Mouth ulcer	2
Sore eyes	2
Boils	2
Arthritis	2
Tuberculosis	2
Flu	2
Menstrual cramp	2
Impotence	2
Headache	1

Sterility	1
Snake bite	1
AIDS	1
Kidney pain	1
Migraine	1
Acid Reflux	1
Typhoid fever	1
Dislocation	1
Gas pain	1

Based from the Sama Bangingi respondents, cough was the common ailment (Table 4). However, it is not necessarily an ‘abnormal’ symptom with clinical significance (Chung *et al.*, 2003). Exposure to pollutants or environmental irritants appears to be one of the causes of cough, other causes of cough are asthma, tobacco smoking, exposure to environmental tobacco smoke and obesity. Factors that cause cough were mostly smoking, exposure to smoking, asthma, and pollutants.

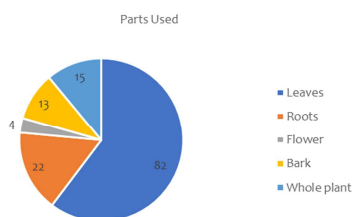


Fig. 2. Frequency of usage of the different parts of the plant

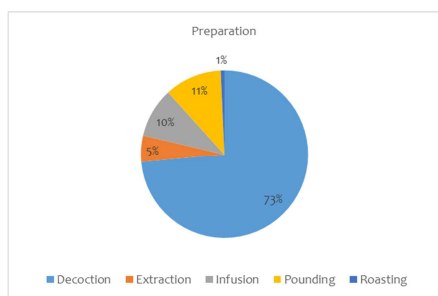


Fig. 3. Preparation of the plant species

Among the different parts of medicinal plants used as medicine by the local traditional healers, the leaves were most frequently used for the treatment of diseases followed by the whole plant parts, fruits, stem, root, seed and flower (Fig. 2). Leaves are also highly utilized because they are obtained easily in large quantities in contrast to other plant parts. Most of the indigenous healers prefer to use the leaves

since these are considered to contain active component such as alkaloids and tannins (Passalacqua *et al.*, 2007; Fortini *et al.*, 2016).

The top three mode of preparations are decoction (73%) followed by pounding (11%), and infusion (10%) (Fig. 3). Studies have shown that decoction of plants is a preferred mode of preparation, which the preparation of the plant-based remedies are usually done at home and often seen as a self-help measure (Daswani *et al.*, 2011). Decoction is a strategy that is utilized for extraction on harsh materials such as roots and bark. There is a minor difference from the common infusion process, which is the constant supplement of heat, to keep the finely partitioned herb saturated in boiling water (Suna *et al.*, 2019).

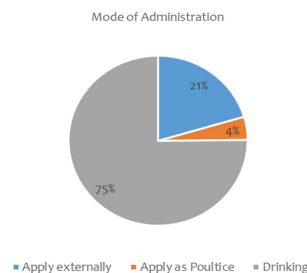


Fig. 4. Mode of administration of the plant species

Fig. 4 shows the mode of administration of the plant’s species, wherein drinking (75%) has the highest number of modes of preparation followed by apply as poultice (21%), and apply externally (4%). There are various routes of administration of medicinal remedies to treat human ailments. Drinking or oral is mostly used in administering medicinal plants. Both oral and dermal (falls under as apply as poultice) mode of administration permits the quick physiological reaction of the prepared medicines with the pathogens and increase their curative powers (Abdela, 2018).

Conclusion

Qualitative profile revealed that there are a total of 30 medicinal plants cited by the Sama Bangingi in the island of Tumulutab, Zamboanga City. Leaves were the most common plants part being used.

Decoction as the most common preparation. Drinking as the most common mode of administration and the most common ailment is cough.

Recommendation

Researchers suggested to further explore the potential of medicinal plants used by the Sama Bangingi tribe by performing In vitro assays to assess the potential therapeutic effects of the components present in each medicinal plant particularly in *Lamiaceae* against common ailment of the Sama Bangingi.

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