

Survey on Ethnopharmacology of Medicinal Plants in Iloilo, Philippines

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Abstract

This study aimed to (1) categorize the diversity of medicinal plants in Tigbauan, Iloilo, Philippines based on their taxonomic rank; (2) document the traditional uses, preparations and applications of medicinal plants (ethnopharmacology) by the local community; (3) determine the distribution, morphological forms, habitat and values of indigenous medicinal plant resources in Tigbauan, Iloilo; and lastly identify and enumerate the medicinal uses of each identified indigenous plants. Ethnopharmacological and taxonomic data of indigenous medicinal plants were collected in the study site through semi-structured interview and snowball sampling methods among knowledgeable elders, gardeners, healers, and traders. The taxonomic classification of the indigenous medicinal plants in Tigbauan, Iloilo was based on Cronquist's System of classification. A total of 101 species, grouped within 92 genera, 44 families and 27 orders. The medicinal plants were described according to preparation techniques, mode of application, administration route, growth forms, habitat distribution, abundance and medicinal uses. Results showed a diversity of medicinal plants, traditional and ethnopharmacological knowledge about the uses, preparations and applications present and maintained among the Tigbauenos. This study allowed the identification of many high value and high priority medicinal plant species, indicating high potential for economic development through sustainable collection and trade.

Keywords: *Ethnopharmacology, medicinal plants, survey, Tigbauan*

1. Introduction

1.1. Background of the Study

Medicinal plants have important contributions in the healthcare system of local communities as the main source of medicine for the majority of the rural populations. Plants do not have only nutritional value but have ritual or magical values [1]. They play a key role in the development and advancement of modern studies by servicing as a starting point for the development of novelties in drugs [11].

The ongoing recognition of medicinal plants is due to several reasons including escalating faith in herbal medicine. Allopathic medicine may cure a wide range of diseases; however its high prices and side effects are causing many people to return to herbal medicines which have fewer side effects [6]. Conversely, because information on the use of plant species for therapeutic purpose has been passed from one generation to the next through oral tradition,

this knowledge of therapeutic plants has started to decline and become obsolete through the lack of recognition by younger generations as a result of a shift in attitude and ongoing socio-economic changes [6, 5]. Furthermore, the indigenous knowledge on the use of lesser known medicinal plants is also rapidly declining [7]. Through the realization of the continuous erosion in the traditional knowledge of many valuable plants for medicine in the past and the renewal interest, currently, the need existed to review the valuable knowledge with the expectation of developing the medicinal plant sectors [7].

Traditional knowledge on biodiversity concerns the names, uses and management of plants and animals as perceived by the local or indigenous people in a given area. Folk names of plants and animals are the roots of traditional biodiversity knowledge [8]. Besides, folk systems of naming and classification of plants and animals are transmitted from generation to generation is constantly created by communities and groups in response to their environment.

1.2. Objectives:

- a. To categorize the diversity of indigenous medicinal plants in Tigbauan, Iloilo based on their taxonomic rank.
- b. To document the traditional uses, preparations and applications of medicinal plants (ethnopharmacology) by the local community.
- c. To determine the distribution, morphological forms, habitat and values of indigenous medicinal plant (ethnobotany) resources in Tigbauan, Iloilo.
- d. To identify and enumerate the medicinal uses of each identified indigenous plant species.

2. Methodology

2.1 The Study Area

The land area has a total 8,889 has. wherein 93.78% is devoted to agriculture and allied activities [16]. Of this area, 1,077 has. are planted with coconut while 4,554 has., with rice and 19 has. are devoted to fishpond. Around 60 has. are located to urban uses are residential, commercial, and institutional. The municipality has a flat terrain. The plain is approximately 57% of the total area, covering about 6,667 has. along the Northwest site of the Sibalom River. Along the boundaries of Guimbal, Leon and Tubungan are rolling hills covering an area, of about 1,518 has. This is shown in Figure 1. It has no forest covered. The highest point is 200 meters above sea level and lowest is one (1) meter above sea level. The town has two main rivers, Sibalom and Tacuyong River. Based on morphological studies, Tigbauan has four (4) types of soil namely; Sta Rita Clay, Lamingan fine sand loam, Alimodian clay loam, and Alimodian silt loam. With these types of soil and slope category, a total area of 1,077 has. is devoted to coconut while the rest of the rolling hills are planted with root crops, bamboos, corn and fruit trees such as mangoes, etc. It has two seasons, the wet and the dry: the first, starts early June and ends early November while the second, starts early of November and ends in the month of May. As influenced by these two seasons, the municipality has two basic industries- agriculture and fishing.



Figure 1. Map of Tigbauan, Iloilo

2.2 Sampling Method

The snowball sampling or chain referral sampling was used in the study. It is a nonprobability technique that is used by the researcher to identify potential subjects in studies where subjects are hard to locate [13]. Participants were purposively selected which include key informants, plant collectors or gardeners, traditional healers and traders.

2.3 Ethnobotanical Data Collection

Ethnopharmacological data were collected from August 20 to September 12 2010 through semi-structured interviews with selected knowledgeable elders, gardeners, healers, and traders, ages between 35 to 80 years old with 5 males and 8 females from the selected barangays based on a survey questionnaire. Interviews and discussions were conducted in dialect on site. For ethical purpose, the data were collected with the permission of the informants and knowledge of the local barangay officials especially the barangay captains.

2.4 Plant Classification Procedure

The common local and scientific names of plants and their taxonomic classification such as classes, orders and families were identified through species and genera based on the references by Buot, et al., (2006), Cronquist (1988), De Tavera (1901) Madulid (2000), Quisumbing (1978), Simpson (2005), Stuart (2000) and Watson and Dallwitz (1992). Sample specimen were collected for those species in which field identification was not certain and brought to West Visayas State Univesity, La Paz, Iloilo City that can facilitate the proper identification using their reference collections.

2.5 Plant Identification

Voucher specimens were collected for the encountered plant species both in the wild and home gardens. Preliminary identification of the collected specimens were made in the site, then they were dried based on the standard procedures in herbarium specimen preparations [3]. Herbarium specimen was initially identified based on published reference collections and websites, compared with authentic herbarium specimens from WVSU and finally confirmed by a Botany and Taxonomy instructor.

2.6 Ethnobotanical Data Analysis

Descriptive statistical method using the percentage was employed to analyze and summarize the ethnobotanical data on the reported medicinal plants and associated knowledge.

3. Results

3.1 Taxonomy of Identified Medicinal Plants in Tigbauan, Iloilo

The taxonomic classification of the indigenous medicinal plants in Tigbauan, Iloilo based on the survey questionnaire of the local name of the plants was based on Cronquist's System of classification. This was further based on the references of Buot, et al., (2006), Cronquist (1988) and Watson and Dallwitz (1992). The medicinal plants' taxonomy is shown below.

Division *Magnoliophyta*

Class *Magnoliopsida*

I.Subclass *Magnoliidae*

1.Order *Magnoliales* (Bromhead (1838)

1.Family *Annonaceae* Juss. (1789)

1.*Annona muricata*

2.*Annona reticulata*

3.*Annona squamosa*

2.Order *Piperales* Dumort. (1829)

2.Family *Piperaceae*

1.*Peperomia pellucida* Linn.

2.*Piper betle*

II.Subclass *Caryophylliidae*

3.Order *Caryophyllales*

3.Family *Basellaceae*

1.*Basella rubra* Linn.

4.Family *Nyctaginaceae*

1.*Mirabilis jalapa* Linn.

5.Family *Polygonaceae* Juss. (1789)

1.*Antigonon leptopus*

6.Family *Portulacaceae* Juss. (1789)

1.*Portulaca oleracea* Linn.

4.Order *Ranunculales* Dumort. (1829)

7.Family *Menispermaceae* Juss. (1789)

1.*Tinospora rumphii* Boerl.

5.Order *Saxifragales* Dumort (1829)

8.Family *Crassulaceae* J. St.-hil. (1805)

1. Bryophyllum pinnatum

III. Subclass Rosidae

6. Order *Brassicales* Bromhead (1838)
 9. Family *Caricaceae*
 1. *Carica papaya*
 10. Family *Moringaceae* Martynov (1820)
 1. *Moringa oleifera*
7. Order *Fabales* Bromhead (1838)
 11. Family *Fabaceae* Lindl. (1836)
 1. *Bauhinia malabarica*
 2. *Cassia alata* Linn.
 3. *Clitoria ternatea* Linn.
 4. *Erythrina variegata* Linn.
 5. *Gliricidia sepium*
 6. *Mimosa pudica* Linn.
 7. *Pachyrrhizus erosus* Linn.
 8. *Pithecellobium dulce*
 9. *Pterocarpus indicus* Willd.
 10. *Samanea saman* Merr.
 11. *Sesbania grandiflora* Linn.
 12. *Tamarindus indica* Linn.
8. Order *Malpighiales* Mart (1829)
 12. Family *Euphorbiaceae* Juss. (1789)
 1. *Antidesma bunius* Linn.
 2. *Euphorbia hirta* Linn.
 3. *Macaranga tanarius*
 4. *Manihot esculenta* Crantz.
 5. *Phyllanthus urinaria*
 6. *Ricinus communis* Linn.
9. Order *Malvales* Dumort. (1829)
 13. Family *Bixaceae* Kunth (1822)
 1. *Bixa orellana*
 14. Family *Malvaceae* Juss. (1789)
 2. *Abelmoschus esculentus* Linn.
 3. *Corchorus olitorius* L.
 4. *Hibiscus rosa-sinensis* L.
 5. *Hibiscus sabdariffa* Linn.
 6. *Sida rhombifolia* Linn.
 7. *Theobroma cacao* Linn.
10. Order *Myrtales* Rchb. (1828)
 15. Family *Combretaceae* R. Br. (1810)
 1. *Quisqualis indica*
 2. *Terminalia catappa*
 16. Family *Myrtaceae* Juss (1789)
 1. *Syzygium cumini*
 2. *Psidium guajava*
11. Order *Oxalidales* Heintze (1927)
 17. Family *Oxalidaceae* R. Br. (1818)
 1. *Averrhoa bilimbi*

- 2. *Averrhoa carambola* Linn.
- 3. *Oxalis repens* Thub.
- 12. Order *Rosales* Perleb (1826)
 - 18. Family *Moraceae* Link (1831)
 - 1. *Artocarpus altilis*
 - 2. *Artocarpus heterophyllus* Lam.
 - 3. *Ficus elastica*
 - 19. Family *Anacardiaceae* R. Br. (1818)
 - 1. *Spondias pinnata* (Linn. f.) Kurz
 - 2. *Spondias purpurea* Blanco
- 13. Order *Sapindales* Dumort. (1829)
 - 20. Family *Meliaceae* Juss. (1789)
 - 1. *Azadirachta indica* A. Juss.
 - 2. *Sandoricum koetjape* Merr.
 - 3. *Swietenia mahogany* Jacq.
 - 21. Family *Rutaceae* Juss. (1789)
 - 1. *Citrus hystrix*
 - 2. *Citrus microcarpa*
 - 3. *Triphasia trifolia* P. Wils.
 - 22. Family *Sapindaceae* Juss. (1789)
 - 1. *Cardiospermum halicacabum*
- IV. Subclass *Asteridae*
 - 14. Order *Apiales* Nakai (1930)
 - 23. Family *Apiaceae* Lindl (1836)
 - 1. *Centella asiatica*
 - 24. Family *Araliaceae* Juss. (1789)
 - 1. *Nothopanax scutellaria* (Burm. f.) Merr.
 - 15. Order *Asterales* Lindl (1833)
 - 25. Family *Asteraceae* Martynov (1820)
 - 1. *Wedelia biflora* Linn.
 - 2. *Blumea balsamifera* (Linn.) D. C.
 - 15. Order *Ericales* Dumort. (1829)
 - 26. Family *Balsaminaceae* Bercht and J. Prel (1820)
 - 1. *Impatiens balsamina* Linn.
 - 27. Family *Ebenaceae* Gurke (1891)
 - 1. *Diospyros blancoi*
 - 28. Family *Sapotaceae* Juss. (1789)
 - 1. *Achras sapota* Linn.
 - 2. *Chrysophyllum cainito* Linn.
 - 3. *Pouteria campechiana* (HBK.) Baehni
 - 17. Order *Gentianales* Lindl. (1833)
 - 29. Family *Apocynaceae* Juss. (1789)
 - 1. *Catharanthus roseus* Linn.
 - 2. *Nerium indicum* Mill.
 - 3. *Plumeria rubra*
 - 4. *Tabernaemontana pandacaqui*
 - 30. Family *Rubiaceae* Juss. (1789)
 - 1. *Gardenia jasminoides*
 - 2. *Morinda citrifolia*

- 3. *Mussaenda philippica* A. Rich.
 - 4. *Nauclea orientalis*
 - 18. Order *Lamiales* Bromhead (1838)
 - 31. Family *Lamiaceae* Martynov (1820)
 - 1. *Coleus aromaticus* Benth.
 - 2. *Coleus scutellarioides*
 - 3. *Mentha arvensis* Linn.
 - 4. *Pogostemon cablin* Blanco.
 - 32. Family *Oleaceae* Hoffmanns. and Link (1809)
 - 1. *Jasminum sambac* Linn.
 - 33. Family *Verbenaceae* J. St.-Hil. (1805)
 - 1. *Duranta repens* Linn.
 - 2. *Lantana camara*
 - 3. *Premna odorata* Blanco
 - 4. *Vitex negundo* Linn.
 - 34. Family *Boraginaceae* Juss. (1789)
 - 1. *Cordia obliqua* Willd.
 - 2. *Ehretia microphylla* Lam.
 - 19. Order *Solanales* Dumort (1829)
 - 35. Family *Convolvulaceae* Juss. (1789)
 - 1. *Ipomoea aquatica* Forsk.
 - 2. *Ipomoea batatas* Linn.
 - 36. Family *Solanaceae* Juss. (1789)
 - 1. *Capsicum frutescens*
- Class *Liliopsida* (Monocots)
- I. Subclass *Liliidae*
 - 20. Order *Alismatales* Dumort. (1829)
 - 37. Family *Araceae* Juss. (1789)
 - 1. *Colocasia esculenta* Linn.
 - 2. *Pistia stratiotes*
 - 21. Order *Asparagales* Bromhead (1838)
 - 38. *Iridaceae* Juss. (1789)
 - 1. *Jatropha curcas*
 - 22. Order *Liliales* Perleb (1826)
 - 39. Family *Liliaceae* Juss. (1789)
 - 1. *Aloe barbadensis* Mill.
 - 23. Order *Pandanales* Lindl. (1833)
 - 40. Family *Pandanaceae*
 - 1. *Pandanus tectorius*
 - 24. Order *Poales* Small (1903)
 - 41. Family *Poaceae* (R. Br.)Barnh. (1895)
 - 1. *Andropogon citratus* D.C.
 - 2. *Saccharum spontaneum*
 - 3. *Saccharum officinarum* Linn.
 - 25. Order *Zingiberales* Griseb. (1854)
 - 42. Family *Musaceae* Juss. (1789)
 - 1. *Musa sapientum* Linn.
 - II. Subclass *Commeliniidae*
 - 26. Order *Arecales* Bromhead (1840)

- 43. Family *Arecaceae* Schutz. Sch. (1832)
 - 1. *Areca catechu*
 - 2. *Cocos nucifera*
 - 3. *Corypha elata*
- 27. Order *Commelinales* Dumort (1829)
- 44. Family *Commelinaceae* Mirb. (1804)
 - 1. *Rhoeo discolor*

3.2 Summary of the Taxa Recorded

The informants reported 101 plant species that they know which were used for medicinal purposes. The total number of taxa was summarized into orders, families, genera and species of medicinal plants in Tigbauan, Iloilo. This is shown in Table 1.

Table 1. Total Number of Taxa Recorded

Number of species	101
Genera	92
Families	44
Orders	27

3.3 Plant Parts Used for Medicine

Based on the survey result on medicinal plant parts used for medicinal purposes, the leaves are the most commonly utilized part of the plant while the seeds are rarely used to treat various ailments. This is shown in Figure 2.

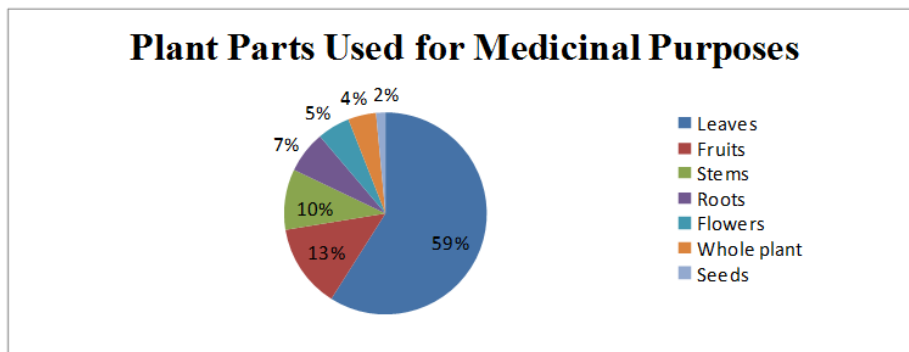


Figure 2. Plant Parts Used for Medicinal Purposes

3.4 Preparation, Application and Administration Route of Medicinal Plants

Plant parts used are prepared as medicine using fresh plant parts, dried plant material or both. The common forms of preparation methods for remedies made from medicinal plants are paste wherein fresh plant parts are crushed with a mortar and pestle, decoction where plant parts are boiled in water and the extract (crude drug) is used, chewing where fresh plant parts are chewed and infusion where plant parts are plunged in water for a few minutes. Paste (44%) is the most common form of preparation technique used by the people while infusion (1%) is rarely used. This is further shown in Figure 3.

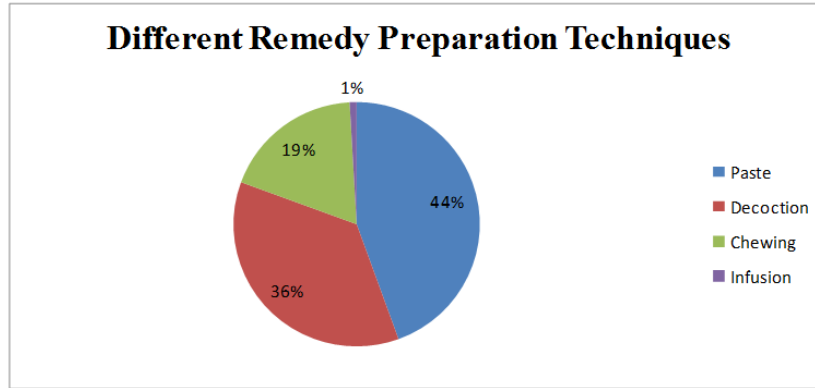


Figure 3. Different Remedy Preparation Methods

For the method of application, external application (57.01%) is more frequently employed than the internal application (42.98%) as shown in Figure 4. In external application, rubbing or ointment (57%) is the most frequently used while chew and spit the residue (3%) is the least frequently used. This is shown in Figure 6. In internal application, drinking is the most commonly used way of taking the medicine (67%) while chewing and swallowing the juice (6%) is the least common way of taking the medicine. This is shown in Figure 5. Since external application is more common than internal one, cutaneous route administration has the highest percentage (55.26%) while nasal route is not used at all. This is shown in Figure 7.

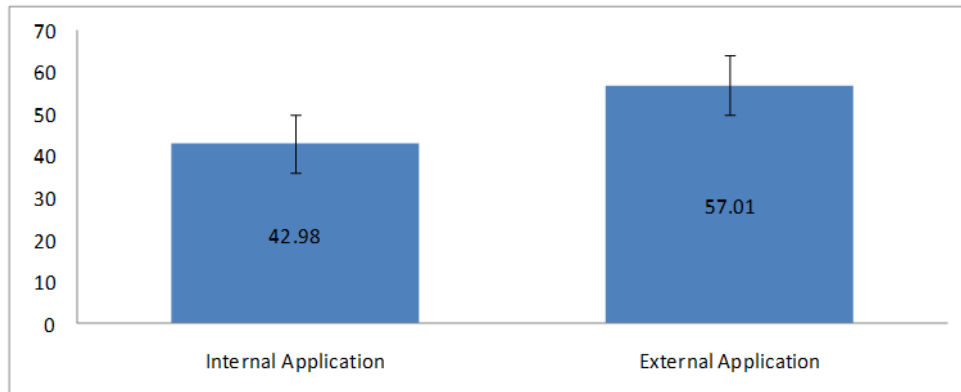


Figure 4. Method of Application

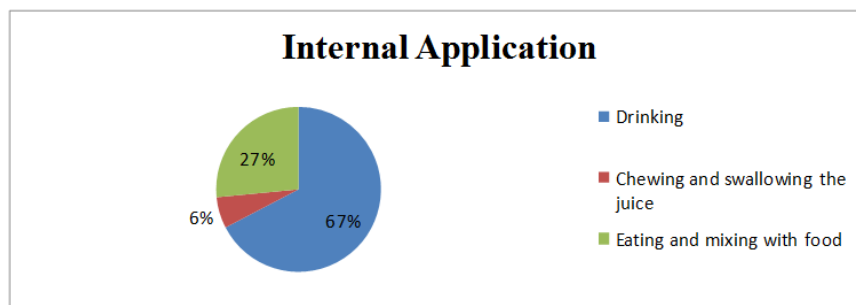


Figure 5. Percentage of Internal Application

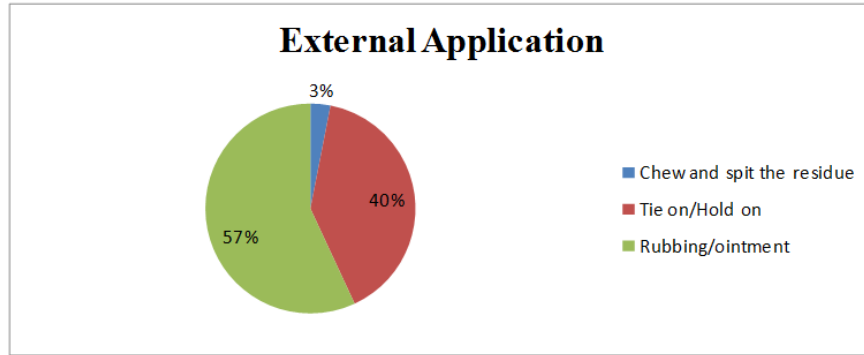


Figure 6. Percentage of External Application

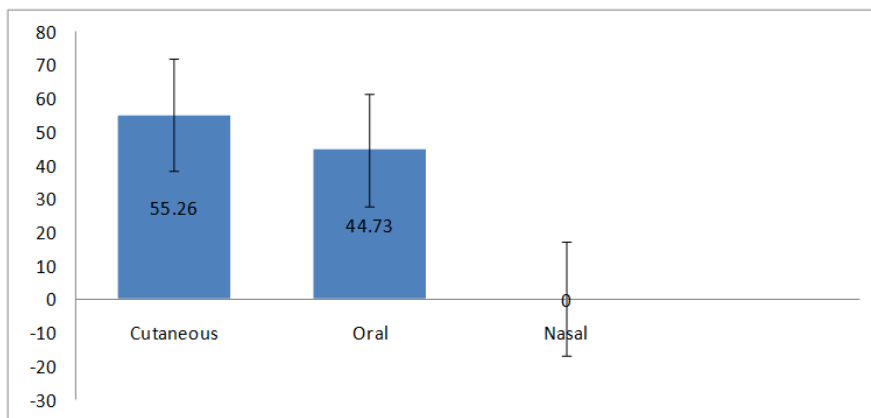


Figure 7. Administration Route

3.5 Diversity in Growth Forms of Medicinal Plants

In the analysis of growth forms, it shows that of the total medicinal plants (n=101), trees (46.53%) has the highest type of frequently used medicinal plants while shrubs (15.85%) is the lowest type of frequently used medicinal plants in terms of growth forms. This is also known as the plant habit. Furthermore, it is shown in Figure 8. The vines are classified and incorporated with the herbs for practical purposes.

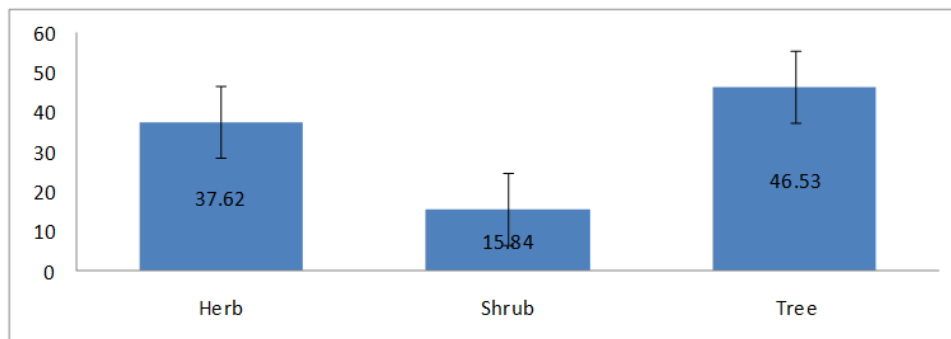


Figure 8. Growth Forms of Medicinal Plants

3.6 Habitat and Distribution of Medicinal Plants in the Site

The plants habitat are classified depending where their availability can be located or commonly exist and grow in home gardens which encompasses the area surrounded by the owner's fence both back and front yards or in the wild, beyond the owners residential lot. The results show that medicinal plants are more commonly found in wild habitats (53.09%) rather than in home gardens (46.9%). This is shown in Figure 9.

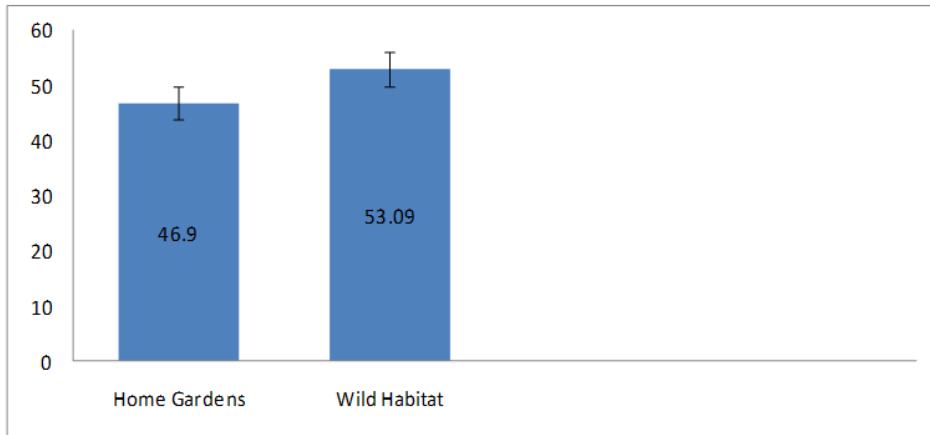


Figure 9. Percentage Distribution on the Habitat of Medicinal Plants

The wild habitat is further subdivided into seven locations which may be far or near the local people's residence or covers certain distances away from the folk's population. This may be considered also as remote or isolated area. The forest (44%) is the most common site of the medicinal plants which allow their usual and natural growth of plants as undisturbed by the people and can affect their abundance. The area closed to streams and rivers (3%) such as river banks and dikes is the least frequent location of the plants. This is shown in Figure 10. Thus, location and the condition of the environment may affect the growth and distribution of the medicinal plants.

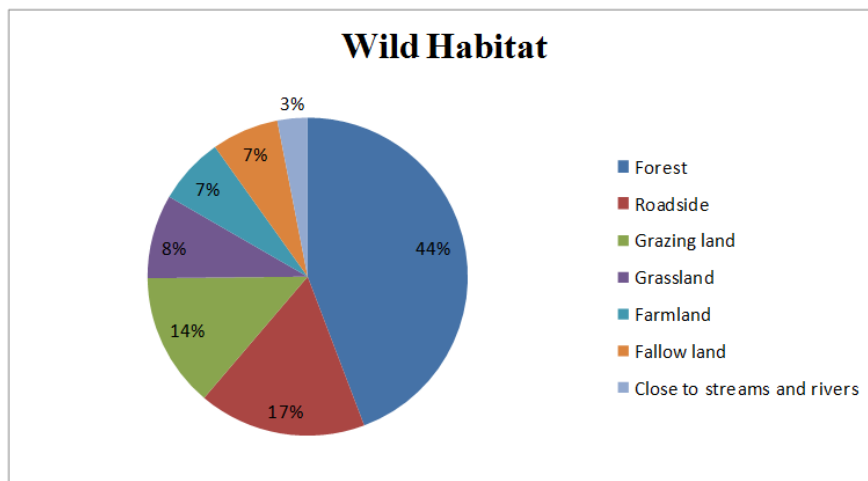


Figure 10. Percentage Distribution of Medicinal Plants in the Wild Habitat

3.7 Abundance of Medicinal Plants

Based on the informants' knowledge about the abundance and scarcity of the medicinal plants in the area, they were described into three categories, commonly, occasionally and rarely encountered not only by them but with other locals also. Majority of the medicinal plants were commonly encountered (56%, n=57), occasionally encountered (34%, n=34) and rarely encountered (10%, n=10) in the study site. This is shown in Figure 11. The quantity of the medicinal plants was reported to have been decreasing from time to time. This may be brought about by both anthropogenic (human-related activities) and non-anthropogenic (physical and chemical conditions of the environment) factors. The commonly encountered plants (56%) are the herbs and shrubs that indigenously found near or within the lot of the local residences such as home gardens, fallow lands, grazing lands, grassland and roadside. The rarely encountered plants (10%) can be found in the forest or nearby river or streams consist of shrubs and trees.

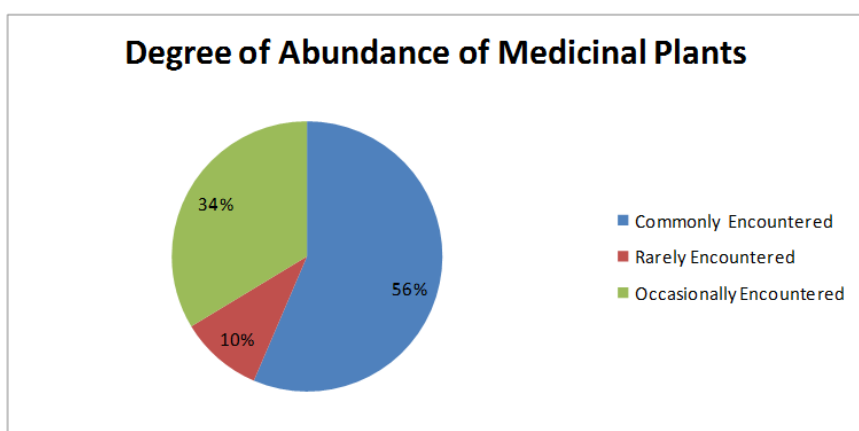


Figure 11. Degree of Abundance of Medicinal Plants

The medicinal plants were further listed and identified according to their degree of abundance. This is shown in Table 4.

Table 4. List of Plants According to the Degree of Abundance

Degree of Abundance	List of Plants
Rarely Encountered	<i>Spondias pinnata</i> , <i>Nothopanax scutellaria</i> , <i>Areca catechu</i> , <i>Cordia obliqua</i> , <i>Quiqualis indica</i> , <i>Macaranga tanarius</i> , <i>Pachyrrhizus erosus</i> , <i>Sesbania grandiflora</i> , <i>Pogostemon cablin</i> , <i>Premna odorata</i>
Occasionally Encountered	<i>Spondias purpurea</i> , <i>Annona reticulata</i> , <i>Pistia stratiotes</i> , <i>Corypha elata</i> , <i>Wedelia biflora</i> , <i>Rhoeo discolor</i> , <i>Diopyrus blancoi</i> , <i>Ricinus communis</i> , <i>Bauhinia malabarica</i> , <i>Cassia alata</i> , <i>Erythrina variegata</i> , <i>Coleus aromaticus</i> , <i>Coleus scutellarioides</i> , <i>Mentha arvensis</i> , <i>Hibiscus sabdariffa</i> , <i>Theobroma cacao</i> , <i>Artocarpus altilis</i> , <i>Ficus elastica</i> , <i>Syzygium cumini</i> , <i>Mirabilis jalapa</i> , <i>Averrhoa carambola</i> , <i>Oxalis repens</i> , <i>Pandanus tectorius</i> , <i>Piper betle</i> , <i>Gardenia jasminoides</i> ,

	<i>Morinda citrifolia, Mussaenda philippica, Nauclea orientalis, Citrus microcarpa, Triphasia trifolia, Pouteria campechiana, Lantana camara, Vitex negundo</i>
Commonly Encountered	<i>Annona muricata, Annona squamosa, Catharanthus roseus, Nerium indicum, Plumeria rubra, Tabernaemontana pandacaqui, Colocasia esculenta, Cocos nucifera, Blumea balsamifera, Impatiens balsamina, Basella rubra, Bixa orellana, Ehretia microphylla, Carica papaya, Terminalia catappa, Ipomoea aquatica, Ipomoea batatas, Bryophyllum pinnatum, Antidesma bunius, Euphorbia hirta, Manihot esculenta, Phyllanthus urinaria, Clitoria ternatea, Gliricidia sepium, Pithecellobium dulce, Pterocarpus indicus, Tamarindus indica, Andropogon citratus, Saccharum spontaneum, Saccharum officinarum, Jatropha curcas, Aloe barbadensis, Abelmoschus esculentus, Hibiscus rosa-sinensis, Sida rhombifolia, Azadirachta indica, Sandoricum koetjape, Swietenia mahogany, Tinospora rumphii, Mimosa pudica, Samanea saman, Artocarpus heterophyllus, Moringa oleifera, Musa sapientum, Psidium guajava, Jasminum sambac, Averrhoa bilimbi, Peperomia pellucida, Antigonon leptopus, Portulaca oleracea, Citrus hystrix, Cardiospermum halicacabum, Achras sapota, Chrysophyllum cainito, Capsicum frutescens, Corchorus olitorius, Centella asiatica, Duranta repens</i>

3.8 Medicinal Plants Used to Treat a Particular and Several Ailments

The degree of informants' knowledge on each medicinal plant and the popularity of some medicinal plants in treating specific health problems were identified in general, based on the organ system that they most likely applied and the general ailment that inflicts the human body as a whole. This is shown in Table 5. The idea on the medicinal properties of identified plants in the area were also confirmed and consulted on local medicinal plant references such as by De Tavera (1901), Quisumbing (1978) and Stuart (2000).

Table 5. Medicinal Plants Used to Cure Various Ailments

Gastro-intestinal Disorders	<i>Pandanus tectorius, Carica papaya, Ipomoea aquatica, Saccharum spontaneum, Duranta repens, Andropogon citrates, Spondias purpurea, Macaranga tanarius, Artocarpus altilis, Achras sapota, Gardenia jasminoides, Ehretia microphylla, Artocarpus heterophyllus, Morinda citrifolia, Abelmoschus esculentus, Pithecellobium dulce, Antigonon leptopus, Oxalis repens, Mentha arvensis</i>
Fever and Headache	<i>Jasminum sambac, Terminalia catappa, Sesbania grandiflora, Cordia obliqua, Theobroma cacao, Sida rhombifolia, Corchorus olitorius, Sandoricum koetjape, Diospyrus blancoi, Nothopanax scutellaria, Piper betle, Wedelia biflora, Nerium indicum,</i>

	<i>Tinospora rumphii, Pouteria campechiana, Nauclea orientalis, Chrysophyllum cainito, Averrhoa carambola, Annona reticulata, Annona squamosa</i>
Cuts and Wounds	<i>Tabernaemontana pandacaqui, Coleus aromaticus, Pandanus tectorius, Cardiospermum halicacabum, Bauhinia malabarica, Musa sapientum, Capsicum frutescens, Jatropha curcas, Moringa oleifera, Psidium guajava</i>
Cough and Cold	<i>Coleus aromaticus, Averrhoa bilimbi, Blumea balsamifera, Premna odorata, Tamarindus indica, Saccharum officinarum, Vitex negundo, Triphasia trifolia, Rheo discolor, Swietenia mahogany, Morinda citrifolia, Psidium guajava, Citrus microcarpa, Mentha arvensis</i>
Musculoskeletal Disorders	<i>Jasminum sambac, Coleus aromaticus, Clitoria ternatea, Pogostemon cablin, Piper betle, Corypha elata, Colocasia esculenta, Ricinus communis, Lantana camara, Coleus scutellarioides, Areca catechu, Erythrina variegata</i>
Dermatological Diseases	<i>Terminalia catappa, Catharanthus roseus, Mimosa pudica, Coleus aromaticus, Tabernaemontana pandacaqui, Peperomia pellucida, Pistia stratiotes, Sesbania grandiflora, Bryophyllum pinnatum, Averrhoa bilimbi, Gliricidia sepium, Euphorbia hirta, Nerium indicum, Cassia alata, Mirabilis jalapa, Lantana camara, Aloe barbadensis, Corypha elata, Hibiscus sabdariffa, Bixa orellana, Centella asiatica, Spondias pinnata, Basella rubra, Pterocarpus indicus, Azadirachta indica, Quisqualis indica, Annona muricata, Ficus elastic, Antidesma bunius, Mussaenda philippica, Syzygium cumini, Portulaca oleracea, Oxalis repens, Hibiscus rosa-sinensis</i>
Ophthalmological Problems	<i>Phyllanthus urinaria, Euphorbia hirta</i>
Toothache	<i>Plumeria rubra</i>
Kidney Problems	<i>Pacchyrrhizus erosus, Cocos nucifera</i>

4. Discussion

The number of medicinal plants (n=101species) and their uses in the community demonstrates the depth of the local knowledge on indigenous medicinal plants and their applications. In general, various studies have shown that different areas in different parts of the world demonstrated the existence of considerable amount of indigenous ethnopharmacological knowledge. Traditional healers believe in a form of sanctity of the curative power of medicinal plants. The district of Tigbauan, Iloilo showed a reliance on medicinal plants for health care that may be associated with poverty, lack of accessibility to nearby hospitals and modern facilities and the traditional beliefs about plant effectiveness.

There is a diversity of medicinal plants and traditional knowledge about the use, preparation and application which is still maintained among the Tigbauenos. The preservation of this knowledge appears to be the result of the continued reliance of the local communities on the medicinal plants. Utilization of more trees than herbs and shrubs for medicinal purpose may hint at the fact that the pressure due to harvesting medicines is significant on plant diversity in the area. Using more leaves than other plant parts imply that traditional medical culture in the area does not threaten biological diversity.

5. Conclusions and Recommendations

There are about 101 species of medicinal plants surveyed in Tigbauan, Iloilo, Philippines grouped into 92 genera, 44 families and 27 orders based on Cronquist system of classification. It has been documented that these plant used with medicinal values are prepared using fresh plant parts, dried plant material or both and preparation methods for remedies are paste, decoction, chewing and infusion. They are either applied internally or externally depending on the plant species. The growth forms of these plants are trees, shrubs and herbs and distributed at home gardens and in wild habitats. The distributions of these plants are described being commonly encountered, rarely encountered and occasionally encountered. Furthermore, these plants are used to treat various diseases or ailments such as gastro-intestinal disorders, fever and headache, cuts and wounds, cough and cold, musculoskeletal disorders, dermatological diseases, ophthalmological problems toothache and kidney problems.

It is recommended for a detailed phytochemical screening of indigenously used medicinal plants in Tigbauan, Iloilo. It can also be consulted on the listed screened plants in the Philippine Pharmacopeia. Proper and community based-management of indigenous medicinal plants to ensure their long term availability for indigenous medicinal and commercial uses is a must. Public awareness is needed to be encouraged at all levels to maintain the biodiversity and the ethnomedicinal knowledge of the Tigbauenos. Creation of database of medicinal plants in the study site that could become part of the database of the medicinal plants in the Philippines is also advised. Other means of sampling can be done to further recognize and discover unidentified medicinal plants in the area. Conduct research on the propagation and cultivation methods of indigenous medicinal plants for human and livestock diseases.

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