

An Ethnomedicinal Study of Plants and Traditional Health Care Practices in District 7, Cavite, Philippines

Lloyd O. Balinado and Merab A. Chan

Abstract—The study was conducted to provide a documentation of the ethnomedicinal knowledge and practices in District 7, Cavite and to determine its importance and its diversity of traditional medicinal uses. Eighteen informants were identified following a snowball sampling technique and were interviewed on their traditional health knowledge and practice of using local medicinal plants. Gathered data were quantitatively analyzed through calculation of use value, fidelity level and informant consensus factor. This evaluated the importance of reported plants and its diversity of uses in District 7, Cavite.

Seventy-six medicinal plants belonging to 40 families largely represented by Lamiaceae were reported in the study. Majority of these plants are cultivated herbs and shrubs. Leaves are usually harvested for use and employed internally as decoctions. These plants are reported to treat several ailments belonging to 12 categories following the International Classification of Diseases (ICD-10). Quantitative analyses then revealed the most preferred species for use in different ailment categories. These are *Jasminum sambac* (for ICD-10: VII), *Senna alata* (XII), *Euphorbia hirta* (I), *Vitex negundo* (XVIII), *Rauwolfia serpentina* (IV), *Peperomia pellucida* (IX), *Chrysophyllum cainito* (XI), *Plectranthus scutellarioides* (XIX), *Graptophyllum pictum* (X), *Phyllanthus niruri* (XIV), *Moringa oleifera* (XXI), and *Bryophyllum pinnatum* (XIII). Based on calculated UVs, the most widely used medicinal plants in the district were *Annona muricata*, *Blumea balsamifera*, *Plectranthus amboinicus*, *Cymbopogon citratus*, *Euphorbia hirta*, *Jatropha curcas*, *Psidium guajava*, and *Vitex negundo*.

The study demonstrates that District 7, Cavite has a wide variety of plant species of medicinal significance and that the knowledge and practice of using them are still playing a role in supporting local health care despite the rise of urbanization. These claimed medicinal plants could then be further tested for safety and efficacy for a wider local use and for future scientific and pharmaceutical applications.

Keywords—ethnomedicine, informant consensus factor, fidelity level, use-value, ICD-10

I. INTRODUCTION

One of the most important ecological services provided by plants around the world is medicine, as between 50,000 to 80,000 angiosperms worldwide are being utilized for medical

Manuscript received Dec. 22, 2016. This work was supported in part by the Department of Science and Technology-Accelerated Science and Technology Human Resource Program (DOST-ASTHRDP).

L. O. Balinado is with the Department of Biological Sciences, Cavite State University, Indang, Cavite, 4122 Philippines.

M. A. Chan is with the Department of Biology, Ateneo de Manila University, Loyola Heights, Quezon City, 1108 Philippines.

purposes [1][2][3]. With its existing plant diversity pattern [4], the Philippines holds a high number of medicinal plant species entailing a broader scope for healing [1]. These medicinal plants significantly support cheaper [5], immediate [3], and safe and effective [6][7] health care in the country, where people below the poverty line and those in isolated areas have inaccessibility to acquiring modern health services [8][9][10][11].

The knowledge on this medicinal plant use is held mostly by traditional cultures [12] including the Philippines' 170 ethnolinguistic and 110 indigenous groups [13]. This traditional knowledge is then being passed on from one generation to the next through oral communication [10]. However, in this modern era, urbanization causes younger generations to be more integrated into the mainstream society [14]. This continuously threatens the ethnomedicinal knowledge and practices in the Philippines to be no longer passed on to them like in the situation of the predominantly urban province of Cavite [15][16]. This traditional knowledge could hold the answer to cure several diseases in the future [11]. However, most studies involving ethnomedicinal plants in the country focus more on indigenous groups, and less on more urbanized ethnic communities whose traditional health care practices are also at threat. Hence, continuous documentation of ethnomedicinal plants through scientific researches is deemed necessary to be conducted not only to conserve this oral custom but to support local health care as well [17]. This study aims to document the ethnomedicinal knowledge and practices in District 7, Cavite by identifying and recording the medicinal plants used in the locality, its importance and its diversity of traditional medicinal uses.

II. MATERIALS AND METHODS

A. Study Area

Cavite (14°16' N 120°52' E) is a 142,706-hectare province that is characterized by central hilly upland areas, a shoreline facing Manila Bay, and a rugged portion bordering the province of Batangas [18]. The province is divided into seven congressional districts; District 7 being the study area (Figure 1). Five municipalities of this district were sampled and were represented each by two non-poblacion barangays. These were Alfonso (Brgys. Bilog and Marahan I), Indang (Brgys. Carasuchi and Kayquit III), Maragondon (Brgys. Bucal II and Pinagsanhan-B), Mendez (Brgys. Anuling Cerca II and Anuling Lejos I) and Naic (Brgys. Ibayo Silangan and Labac).



Fig. 1. A map showing District 7, Cavite, Philippines including the five study sites: Alfonso, Indang, Maragondon, Mendez and Naic.

In 2010, the district was reported to have a population of 382, 665 [19]. A total of 52.89% of this population was considered urban, while the other 41.11% belonged to rural areas. Of the five study municipalities, three were predominantly rural, namely Alfonso (rural population share = 82.13%), Indang (62.99%) and Magallanes (98.17%). Mendez (urban population share = 81.84%) and Naic (82.33%) were on the other hand largely urban [18]. The partial rural status of the district could still indicate the reliance of local residents to traditional health care services. However, the respective partial and predominantly urban statuses of District 7 and the entire province then supported the idea that the district is under a state of continuous urbanization. This then made District 7, Cavite a good area for this study, an area where continuing urbanization threatens the inter-generational transfer and conservation of local ethnomedicinal knowledge.

B. Ethnobotanical Data Collection

Prior to collection of data, the study was first approved by the Ethics Committee of the Department of Biology, Ateneo de Manila University.

Data collection was carried out from September to October 2015. Snowball (or chain referral) sampling [3][6][14], a nonprobability sampling technique used to identify target individuals who are hard to locate [20], was utilized in the study. Identification of informants began from the referral of the barangay leaders. These informants were traditional healers in the barangay who were known to be knowledgeable on the traditional uses of medicinal plants in the area.

A total of 18 informants (12 female and 6 male, aged between 48 and 84 with the median age being 63) were identified. These informants first signed an informed consent form prior to the interview. In terms of income source, 38.89% of them were into farming, 22.22% relied on the pension they were receiving, and 16.67% worked as vendors. In addition, these informants had an average length of residency of 51 years in their respective municipalities, in which 55.56% of them were practicing traditional health care service for more than 30 years. Further, 52.63% of the informants had their ethnomedicinal knowledge obtained from their ancestors,

while 15.79% believed that their ability to treat diseases was a supernatural gift.

Using a semi-structured questionnaire [10], informants were asked a series of questions on their traditional health knowledge and practices: (1) vernacular names of local medicinal plants they know and use, (2) ailments treated, (3) plant parts used, (4) plant habit, (5) plant type, (6) time of harvest, (7) methods of preparation, (8) other ingredients added, if applicable, and (9) route of administration.

Interviews were done in conjunction with a field visit accompanied by the informants to collect and take photographs of recorded medicinal plants. Immediately after collection, plant specimens were pressed, dried and preserved following the standard herbarium technique [21]. All herbarium specimens were identified down to species level based on taxonomic accounts available in published references and websites including stuartxchange.com, phytoimages.siu.edu and philippineplants.org. Accepted names were then checked from theplantlist.org and were used. Herbarium specimens were deposited in the Biology Department, Ateneo de Manila University, Quezon City.

C. Ethnobotanical Data Analyses

C.1. Plant Use Classification

Reported ailments were categorized according to the International Classification of Diseases (ICD-10) version 2015. This resulted to 12 different disease categories (Appendix 1), namely: I - certain infectious and parasitic diseases; IV - endocrine, nutritional and metabolic diseases; VII - diseases of the eye and adnexa; IX - diseases of the circulatory system; X - diseases of the respiratory system; XI - diseases of the digestive system; XII - diseases of the skin and subcutaneous tissue; XIII - diseases of the musculoskeletal system and connective tissue; XIV - diseases of the genitourinary system; XVIII - symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; XIX - injury, poisoning and certain other consequences of external causes; and XXI - factors influencing health status and contact with health services.

C.2. Use-Value

Use-value (UV) was calculated to determine the commonness of use of each plant in every municipality and in the entire district. This was calculated using the following formula: $UV = N_{ur}/N_i$, where N_{ur} is the number of plant use-reports in the study area and N_i is the total number of informants.

C.3. Informant Consensus Factor

Informant consensus factor (ICF) was then calculated to determine the homogeneity among informants over the plants to be utilized for every ailment classification [22]. This used the following formula: $ICF = (N_{ur}-N_i)/(N_{ur}-1)$, where N_{ur} is the number of use-reports for an ailment or plant-use classification and N_i is the number of plant species or taxa utilized by all informants for that particular plant-use category. Every report of use of a plant species was considered one use-report. ICF gave values ranging between 0 and 1, with '1' as the highest

level of informant consent.

C.4. Fidelity Level

To determine the most preferred medicinal plant species of informants in treating a particular ailment category, fidelity level (FL) was also calculated [23]. This used the following formula: $FL = (N_p/N) \times 100$, where N_p is the number of use-reports per plant-use category per plant species and N is the total number of use-reports per plant species. Values near 100% indicated high preference for a plant species in treating a particular ailment category; otherwise, it indicated plants having several uses.

III. RESULTS AND DISCUSSION

A. Ethnobotanical Data

A.1. Reported Ethnomedicinal Plants

Following the interviews made with the informants, 76 medicinal plants belonging to 40 families and 69 genera were documented (Appendix 2). These medicinal plants are largely represented by the Lamiaceae (10.67%), Compositae (6.67%), Euphorbiaceae (6.67%), Leguminosae (5.33%) and Anonaceae (4.00%) families. The presence of all these families in this study indicated that District 7, Cavite has a considerable mixture of plant species of medicinal importance.

Given this list of reported medicinal plant species, nine belong to the 10 medicinal plants endorsed by the Department of Health (DOH) and Philippine Institute of Traditional and Alternative Health Care (PITAHC) as part of its traditional health maintenance program. These include the following: *Blumea balsamifera*, *Combretum indicum*, *Ehretia microphylla*, *Mentha arvensis*, *Momordica charantia*, *Psidium guajava*, *Pepperomia pellucida*, *Senna alata* and *Vitex negundo*. Only *Allium sativum* was not mentioned by at least one of the informants. These plants were scientifically proven effective and are continually being endorsed by local health centers through pamphlet distribution and by the academe through its inclusion in science classes [3]. This then could have influenced the medicinal utilization of these plants in the study area.

A.2. Plant Habit

In terms of growth forms, majority of reported medicinal plants are herbs (32.89%) and shrubs (31.58%) (Figure 2). The commonness of these plants could be associated with their accessibility in comparison to other growth forms. In addition, this could be linked to their year-long availability as herbs and shrubs are not usually affected by seasonal variations.

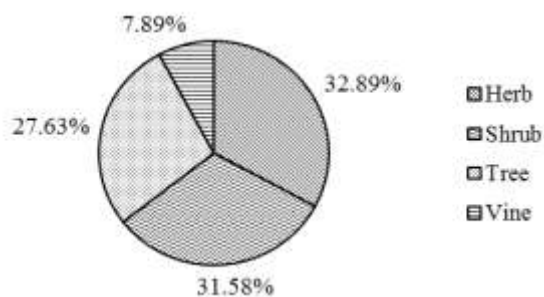


Fig. 2. Percentage composition of reported ethnomedicinal plants based on plant habit. The values are percentages of reports out of the 76 documented medicinal plants.

A.3. Plant Type

Cultivated plants are more commonly utilized in the study area (76.6%) in comparison to the use of wild plants. This finding opposes what was reported in other local ethnomedicinal studies involving other tribal groups where people still used to gather medicinal plants from the wild [3][6][10]. However, incessant collection of wild medicinal plants may result to its decline. As a response, cultivating these plants effectively conserves them and ensures its steady supply any time of the year [24][25][26][27].

Aside from the aforementioned ethnomedicinal knowledge reported by informants, medicinal plants were also documented based on its part/s utilized, time of harvest, ailments treated, methods of preparation, and routes of administration. Data on this traditional health care practice are summarized in Appendix 2.

A.4. Plant Part/s Used

A large portion of ethnomedicinal plants (79.49%) have their leaves recorded to be one of the plant parts, if not the only part, that is being used by the informants (Figure 3). High utilization of leaves reveals its high composition of active ingredients [28]. Leaves manufacture and store a wide range of chemical compounds which actively play role in herbal treatments [3][14]. This finding could also be attributed to the availability and accessibility of leaves to its users [24][29][30]. Further, the use primarily of leaves is considered to be more sustainable [10][31][32] than the collection of other plant parts like roots, barks or the whole plant [33] which in turn poses a high threat to the continuous survival of the mother plant population [30][34][35][36].

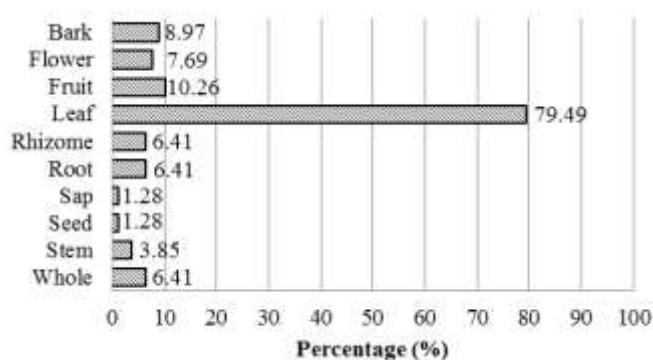


Fig. 3. Percentage composition of reported ethnomedicinal plants based on plant parts used. The values are percentages of reports out of the 76 documented medicinal plants.

As indicated by the calculated percentages in Figure 3, there are plants that are utilized using at least two of its parts. This accounts to 31.58% of the total number of documented plants. This includes the five plants (6.41%) reported by at least one informant to be prepared using whole plants. Of these five, *Cymbopogon citratus* [37][38], *Euphorbia hirta* [39][40][41], and *Mimosa pudica* [42][43] are of herbaceous types. On the other hand, *Euphorbia tirucalli* is a succulent shrub [44][45][46], same with the shrubby *Tabernaemontana pandacaqui* [47].

A.5. Time of Harvest

In terms of the time in which plants are being harvested by the informants, all of them mentioned that all plants are harvested any time of the day and any time of the year. This was in exception of one informant from Naic, Cavite who stated that plant parts for medicinal preparation must be collected before sunset. It is her belief that doing such activities after 6:00 P.M. attracts bad elements and that plants are more effective during the said time of collection. This practice could also have arisen from the perception that at night, plants do sleep. Scientifically, this could be supported by the fact that photosynthesis, which gives rise to a number of active phytochemicals, happens with the help of sunlight [48]. However, diurnal variation in concentration of some phytochemicals [49] that is caused by a number of biotic and abiotic attributes [50][51] should also be taken into consideration as some plants may also be found more effective when harvested and prepared at night.

A.6. Methods of Preparation

The most common method of preparing plants for medicinal use is decoction (52.56%) (Figure 4). This is followed by preparation as poultice (32.05%), preparation for bathing (20.51%) and using the plant part intact (20.51%) and pounding or crushing (14.10%). Steaming (1.28%) and preparation as compress (1.28%), on the other hand, are the least common methods of preparation. High reports of using decocted medicinal plants could be attributed to the greater likelihood of extracting and concentrating active phytochemicals through boiling [31][52], thus increasing its medicinal efficacy [14]. Conversely, some studies also

described the possible negative effects of high temperature to phytochemicals, especially the highly volatile ones [53][54]. Nevertheless, boiling is still a useful method to extract these active plant constituents when limited exposure time of plants to heat is observed.

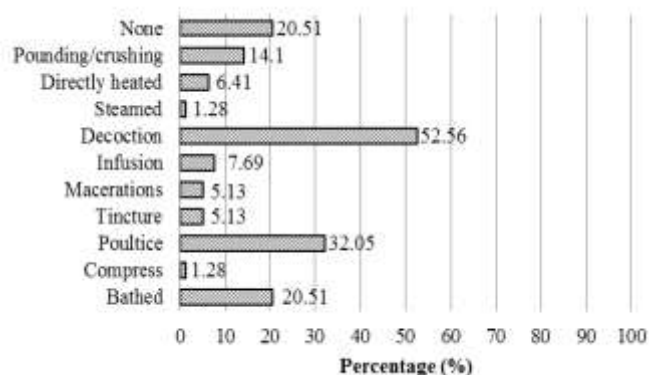


Fig. 4. Percentage composition of reported ethnomedicinal plants based on their methods of preparation. The values are percentages of reports out of the 76 documented medicinal plants.

This study also revealed a belief called *pito-pito* that some of the informants follow to prepare medicinal plants. It is a practice that medicinal plants should be prepared using seven pieces of its collected part (usually the leaves). However, some are using pieces of plant parts in odd counts. For instance, it was stated by one informant from Mendez that nervousness could be treated by drinking concoction of the following plants: *Curcuma longa*, three whole *C. citratus* plant, seven *Codiaeum variegatum* leaves and three *Jatropha curcas* leaves. In addition, informants from Alfonso reported that drinking decoctions of seven leaves of *Plectranthus amboinicus*, *Pandanus amaryllifolius* and *Annona muricata* could treat cough, urinary tract infection and hypertension, respectively. Moreover, drinking decoction of seven leaves of *Abelmoschus esculentus* for chest discomfort was documented from an informant from Naic.

Furthermore, there are no standard measurements or dosages when it comes to administration of medicinal plant preparations. It just depends on patient's age (as children used to receive lesser amounts than adults) and illness, and whether the patient is already relieved or not.

A.7. Route of Administration

Methods of administration are of either external or internal routes. Out of the 76 reported medicinal plant species, 67.53% are used internally, while 63.64% are administered externally. These values suggest that there are plant preparations administered following both routes. This constitutes to 23.68% of the total number of plant reports.

Internal applications include eating the plant part raw, using decocted or macerated herbs as eye drops, and drinking extracts, decoctions, macerations and infusions. On the other hand, external administrations include applying sap, extracts, poultices, compresses or tinctures to skin or any affected body areas, and using plants for bathing. Administration of plant remedies internally demands for higher attention to test for the

safety and efficacy of these plants since it directly targets delicate organs [35]. External application, on the other hand, is considered safer as it results in indirect yet immediate localized effects [3].

A.8. Common Plant Uses

Summarized in Appendix 3 are the combined data on plant parts used, methods of preparation and routes of administration. This reveals that the most common plant use is decocted leaves for internal administration (19.62%), followed by leaves externally applied as poultices (13.29%), and leaves prepared for bathing purposes and thus are externally administered (9.49%). Highest proportions for medicinal plant parts used and their preparations are then recorded for decocted leaves (20.89%), and leaves used as poultice (13.29%) and for bathing (9.49%). In terms of plant parts used and their routes of administration, highest reports are recorded for leaves both internally (34.18%) and externally (32.28%) applied. Further, for combined methods of preparation and routes of administration, highest proportions are for internally applied decoctions (33.54%) and externally administered poultices (17.09%) and bathing preparations (12.03%).

In addition, the use of vegetative plant parts (*i.e.*, leaf, stem, bark, root, rhizome and sap), both external and internal applications combined, is more prevalent (84.18%) than the use of reproductive plant parts (12.03%) represented by flowers, fruits and seeds. The commonness of use of vegetative plant parts could be attributed to the usual availability of these parts all-year round. This is in comparison with reproductive plant parts which are usually seasonally but not always abundantly available in the study area. The same comparison was made between aerial and underground plant parts. Aerial plant parts (*i.e.*, leaf, stem, bark, flower, fruit, seed and sap) are documented to be used more commonly (86.08%) than underground plant parts (10.13%) that include roots and rhizomes only. This finding could be associated to the availability and accessibility of these above-ground plant parts [55]. Further, it is more sustainable unlike the use of underground parts which tends to damage the entire mother plant [3].

A.9. Use of Plant Combinations

In addition to the majority of plant species documented to be used singly in treating a particular ailment, the use of plant combinations was also noted. In agreement with other studies that was carried out elsewhere in the Philippines [3][56] and in other parts of the world [34][54][55][57], polyherbal treatment is believed to aid certain ailments more effectively as it forms more powerful mixtures than those plants used alone. This is attributed to the synergistic effect exhibited by these plant extracts when combined [24][31][52][55][58].

Examples of plant combinations reported by informants include the use of decocted leaves of *Mangifera indica*, *P. guajava* and *Chrysophyllum cainito* to treat diarrhea; decocted leaves of *A. muricata* with leaves of either *P. amaryllifolius* or *C. citratus* to aid conditions like diabetes and hypertension; decocted fruits of *Areca catechu* and leaves of *Piper betle* to deal with skin diseases; decocted leaves of *B. balsamifera*, *C.*

citratus and roots of *Imperata cylindrica* to treat headache and urinary tract infection; decocted leaves of *C. citratus* and *P. amaryllifolius* for diarrhea and abdominal pain; decocted leaves of *C. citratus* and *A. muricata* for hypertension; decocted leaves of *C. citratus*, *J. curcas* and *C. variegatum* with root of *C. longa* for nervousness; leaves of *Ocimum tenuiflorum* and *Capsicum annum* prepared as poultice to treat wounds; decocted leaves or bark of *Persea americana*, leaves of *P. guajava* and bark of *Syzygium cumini* to aid diarrhea; decocted leaves, barks or roots of *Moringa oleifera* with bulb of *Allium cepa* to thicken intestinal wall and for liver problems; macerated leaves of *M. oleifera* and flowers of *Jasminum sambac* to cure constipation; leaves and/or fruits of *C. microcarpa* and leaves of *V. negundo*, *C. aromaticus* or *P. betle* prepared with bath water to treat cough; leaves of *Premna odorata* with leaves of *V. negundo* and *Annona squamosa* prepared as either decocted or for bathing to treat heart problems; and rhizomes of *Zingiber officinale* and *C. longa* prepared as tincture for rheumatism.

B. Quantitative analyses of ethnobotanical data

B.1. Use-Value

Based on the consolidated data, the following plants had the highest UV in the entire district: *B. balsamifera* (UV = 0.67), *C. aromaticus* (0.67), *A. muricata* (0.61), *V. negundo* (0.61), *C. citratus* (0.56), *E. hirta* (0.50), *J. curcas* (0.50) and *P. guajava* (0.50). This indicated that these plants are widely utilized, thus are of great importance [34][59][60] and perceived efficacy [30] within the ethnobotanical district or within the municipalities where these plants were reported. Plant species with high UVs need more attention for conservation as they face a high harvesting pressure [34][59]. However, it was documented in the study area that majority of the medicinal plants used are cultivated, and thus are not threatening their counterparts in the wild.

B.2. Fidelity Level

A wide variation in fidelity levels of reported plant species was observed in the study area. Considering only those ailments reported at least twice per plant species, FLs ranged between 11.76% and 100.00%.

Eleven plant species had a maximum FL of 100.00%. These included *V. negundo* and *C. microcarpa* for cough, *Rauvolfia serpentina* for diabetes, *O. tenuiflorum* for wounds, *Basella alba* for boils, *Punica granatum* for goiter, *B. orellana* for fever and headache, *Plectranthus scutellarioides* for bruises, *C. cainito* for diarrhea, *Hyptis suaveolens* for abdominal pain and *Phyllanthus niruri* for kidney problems. This indicates that each of these plants was mentioned by informants to be used in treating a specific treatment only. The maximum FL of 100% reflects the relative importance of these plants in the community [60] and their relative healing potential against the respective ailments in which these plants were being used. This means that these plants could then be targeted for further phytochemical and pharmacological investigation.

In addition, 52.63% of the reported plants are used to aid ailments belonging to two or more categories. This multiple

therapeutic applications of these plants then contributed to their low FL values. For instance, *C. citratus* is utilized for nine different ailments classified into six ailment categories, each of which had a low FL value: diseases of the circulatory system (FL = 11.76%), diseases of the respiratory system (17.65%), diseases of the digestive system (11.76%), diseases of the genitourinary system (5.88%, reported only once), symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (41.18%) and factors influencing health status and contact with health services (11.76%). Multiple therapeutic applications of plants were also recorded in some ethnomedicinal studies [61]. This could suggest a wide range of active phytochemicals present in these plants, and so further studies on their application could also be considered.

B.3. Informant Consensus Factor

ICF values ranged from as low as 0.63 to as high as 1.00, with a mean value of 0.76. The highest ICF value, 1.00, indicates that there was homogeneity among informants that a particular plant/s was/were consistently being used in that given category. The highest ICF category was for diseases of the eye and adnexa (ICF = 1.00) and of the skin and subcutaneous tissue (1.00), followed by certain infectious and parasitic diseases (0.83) and symptoms, signs and abnormal clinical and laboratory findings, not classified in other categories (0.80). Recorded plants with high ICF values are associated with a small number of medicinal plants with high use-reports for a particular category; thus suggesting consent, or sharing of knowledge, among informants on the use of these plants to treat a particular ailment [34][62][63]. For instance, an ICF value of 1.00 was calculated exclusively for ailment categories with only one reported plant species used. This could then reflect their bioactive components that could further be investigated and that could suggest their high potency in herbal treatment compared to those plants with low ICF values [32][35][64]. Low ICF values, on the other hand, indicate little to no sharing of information between or among informants [63] or their disagreement on the species to be employed in the treatment of an ailment within a category [35][65].

B.4. Most Preferred Species per Ailment Category

Using the calculated ICF and FL values, the most preferred species by informants in each ailment category was determined.

In ailment classifications with highest ICF values, the most preferred species are the following: *J. sambac* for diseases of the eye and adnexa; *S. alata* for diseases of the skin and subcutaneous tissue; *E. hirta* for certain infectious and parasitic diseases; and *V. negundo* for symptoms, signs and abnormal clinical and laboratory findings, not classified in other categories. For the remaining ailment categories namely, 'endocrine, nutritional and metabolic diseases', 'diseases of the circulatory system', 'diseases of the digestive system', 'injury, poisoning and certain other consequences of external causes', 'diseases of the respiratory system', 'diseases of the genitourinary system', 'factors influencing health status and contact with health services', and 'diseases of the musculoskeletal system and connective tissue', the following plant species are correspondingly the most preferred ones: *R. serpentina*, *P. pellucida*, *C. cainito*, *P. scutellarioides*, *G. pictum*, *P. niruri*, *M. oleifera*, and *B. pinnatum*. This result then indicates that these plants could further be tested for their pharmacological activities.

IV. CONCLUSION

This study reveals that District 7, Cavite remains rich in ethnomedicinal knowledge and practices and has a considerable number of plants of medicinal importance. These findings also gave information on the importance of such plants and how it can be used to support local health care. Most of these medicinal plants are herbs and shrubs that are usually cultivated. These are also commonly employed internally as decocted leaves, and are reported to treat several ailments belonging to 12 ICD-10 categories. This study therefore, provides information on a wide range of medicinal plants that can further be tested for future scientific and pharmaceutical use.

APPENDICES

Appendix 1. Informant consensus (ICF) and fidelity level (FL) values for identifying most frequently used species in each ailment category.

ICD-10	DISEASE CATEGORY	AILMENTS INCLUDED ^a	NO. OF USE-REPORTS	NO. OF PLANTS USED	ICF	MOST FREQUENTLY USED SPECIES	FL (%) IN THIS CATEGORY
VII	Diseases of the eye and adnexa	Eye problem	3	1	1.00	<i>Jasminum sambac</i> (L.) Sol.	60.00
XII	Diseases of the skin and subcutaneous tissue	Skin diseases, sweaty scalp, acne, skin complexion	4	1	1.00	<i>Senna alata</i> (L.) Roxb.	80.00
I	Certain infectious and parasitic diseases	Tuberculosis, dengue fever, scabies, boils, worms, bacterial infection	13	3	0.83	<i>Euphorbia hirta</i> L.	81.82
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Abdominal pain, body pain, cough, fever, lamig, headache, flatulence, edema, pasma, wounds, nervousness, dizziness, chest pain or discomfort	76	16	0.80	<i>Vitex negundo</i> L.	100.00
IV	Endocrine, nutritional and metabolic diseases	Diabetes, uric acid, goiter, dehydration	15	4	0.79	<i>Rauwolfia serpentina</i> (L.) Benth. Ex Kurz	100.00
IX	Diseases of the circulatory system	Hypertension, heart problems	12	4	0.73	<i>Peperomia pellucida</i> (L.) Kunth	60.00
XI	Diseases of the digestive system	Constipation, diarrhea, stomach ulcer, rectal inflammations, liver problems, thin intestinal wall, indigestion	17	6	0.69	<i>Chrysophyllum cainito</i> L.	100.00
XIX	Injury, poisoning and certain other consequences of external causes	Wounds, insect bite, sprain/dislocation, bruises, cuts, phlegm	17	6	0.69	<i>Plectranthus scutellarioides</i> (L.) R. Br.	100.00
X	Diseases of the respiratory system	Colds, asthma, flu, tonsillitis, hoarseness, lung problems	7	3	0.67	<i>Graptophyllum pictum</i> (L.) Griff	40.00
XIV	Diseases of the genitourinary system	Urinary tract infection, difficulty of urination, kidney problems, dysmenorrhea	19	7	0.67	<i>Phyllanthus niruri</i> L.	100.00
XXI	Factors influencing health status and contact with health services	Relapse after child delivery, infant care, suob, lactation	4	2	0.67	<i>Moringa oleifera</i> Lam.	33.33
XIII	Diseases of the musculoskeletal system and connective tissue	Arthritis, rheumatism, swollen muscles, lump	9	4	0.63	<i>Bryophyllum pinnatum</i> (Lam.) Oken.	33.33

^aAilments in italics refer to ailments with no direct English translation. *Pasma*; interaction of both hot and cold (or *lamig*) elements, in which its imbalance or the dominance of one element causes the illness; *suob*: postpartum care administered by a traditional healer using herbs, massage, smoke and a prayer.

Appendix 2. List of reported ethnomedicinal plants, the ailments they were used to treat for, plant parts used, and its preparation and administration. Number of use-reports (UR) and its calculated use-value (UV) in the district are also presented.

PLAN T NO.	SCIENTIFIC NAME	FAMILY	VERNACULAR NAME	UR ^a	UV ^b	NO. OF CATEG ORY ^c	AILMENTS TREATED	PLANT PARTS USED ^d	PREPARATI ON	ADMINISTRA TION
001	<i>Abelmoschus esculentus</i> (L.) Moench.	Malvaceae	Okra	1	-	-	Chest pain or discomfort, heart problem	Fr	Decoction	Internal
002	<i>Acorus calamus</i> L.	Acoraceae	Lubigan	1	-	-	<i>Lamig</i> , flatulence	Rz Lf	Compress None	External External
003	<i>Agave americana</i> L.	Asparagaceae	Magay	1	-	-	Relapse	Lf	Heated directly or bathed	External
004	<i>Anamirta cocculus</i> (L.) Wight & Arn	Menispermaceae	Ligtang	1	-	-	Worms	Lf	Poultice	External
005	<i>Annona muricata</i> L.	Anonaceae	Guyabano	11	0.61	4	Diabetes, hypertension, uric acid, cough, abdominal pain	Lf	Decoction or infusion	Internal
006	<i>Annona reticulata</i> L.	Anonaceae	Anonas	1	-	-	Diabetes Headache	Fr Lf	None Poultice	Internal External
007	<i>Annona squamosa</i> L.	Anonaceae	Atis	1	-	-	Dizziness	Lf	None	External
008	<i>Antidesma bunius</i> (L.) Spreng	Phyllanthaceae	Bignay	4	0.22	2	UTI Diabetes	Lf, Bk Bk	Decoction Decoction	Internal Internal
009	<i>Areca catechu</i> L.	Arecaceae	Bungang Putay	1	-	-	Skin diseases, eczema, wound	Fr	Decoction	Internal
010	<i>Artemisia vulgaris</i> L.	Compositae	Altamisa/ Damong Maria	7	0.28	4	Abdominal pain Swollen muscles, wound, lamig, fever Skin disease	Lf Lf Lf	Pounding/ crushing or decoction Poultice Pounding/	Internal External External

011	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Langka	1	-	-	<i>Lamig</i> Worms	Lf Sd	crushing Bathed Directly heated	External External
012	<i>Basella alba</i> L.	Basellaceae	Alugbati	2	0.11	1	Scabies	Lf	Directly heated	External
013	<i>Bixa orellana</i> L.	Bixaceae	Atsuete	3	0.17	1	Boils	Lf	Poultice	External
014	<i>Blumea balsamifera</i> (L.) DC.	Compositae	Sambong	12	0.67	3	Fever, headache, Cough, headache, UTI, edema, <i>lamig, pasma</i> Rheumatism, <i>lamig</i> Fever, cough, <i>lamig</i> Fever, boils	Lf Lf Lf Lf	Poultice Decoction Poultice Bathed Poultice	External External External External External
015	<i>Bryophyllum daigremontianum</i> (Raym.-Hamet & Perrier) A. Berger	Crassulaceae	Katanda	1	-	-				
016	<i>Bryophyllum pinnatum</i> (Lam.) Oken.	Crassulaceae	Katakataka	5	0.28	3	Wound, lump, swollen muscles, fever	Lf	Poultice	External
017	<i>Capsicum annuum</i> L.	Solanaceae	Sili	2	0.11	2	Boils, cuts	Lf	Poultice	External
018	<i>Carica papaya</i> L.	Caricaceae	Papaya	1	-	-	Cuts Hypertension, nasal congestion	Fr Lf	None Pounding/ crushing	External Internal
019	<i>Chrysophyllum cainito</i> L.	Sapotaceae	Kaimito	3	0.17	1	Diarrhea	Lf	Decoction	Internal
020	<i>Citrus microcarpa</i> Bunge	Rutaceae	Kalamansi	2	0.11	1	Cough	Lf, Fr	Bathed	External
021	<i>Cocos nucifera</i> L.	Arecaceae	Niyog/ Buko	3	0.17	5	Cough Diarrhea UTI, uric acid, lung problem, antibacterial	Fr Fr Fr	None Maceration None or heated directly	Internal Internal Internal
022	<i>Codiaeum variegatum</i> (L.) Rumph. ex A. Juss.	Euphorbiaceae	Buenavista / Buenavistang Itim	2	0.11	2	Nervousness	Lf	Decoction	Internal
023	<i>Combretum indicum</i> (L.) DeFilipps	Combretaceae	Niog-niogon	1	-	-	For newborn babies Worms	Lf Fr	Bathed None	External Internal
024	<i>Curcuma longa</i> L.	Zingiberaceae	Luyang Dilaw	5	0.28	5	Abdominal pain Abdominal pain Nervousness Insomnia, sweaty scalp Rheumatism <i>Lamig</i> Diabetes	Rz Rz Rz Rz Rz Rz Rz	Decoction Poultice Decoction Tincture Tincture Decoction Decoction	Internal External Internal External Internal Internal Internal
025	<i>Cymbopogon citratus</i> (DC.) Stapf.	Poaceae	Tanglad/ Salay	10	0.56	6	Abdominal pain, diarrhea, nervousness, difficulty in urinating, hypertension, <i>lamig</i> , flu Nasal congestion, flatulence, for newborn child	Lf, Wh Lf, Wh	Decoction Bathed	Internal External
026	<i>Ehretia microphylla</i> Lam.	Boraginaceae	Tsaang-gubat	3	0.17	3	Flatulence, kidney problems Acne, for fair complexion	Lf Lf	Decoction Bathed	Internal External
027	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Tawa-tawa	9	0.50	3	Dengue fever, fever, UTI	Lf, Wh	Decoction	Internal
028	<i>Euphorbia nerifolia</i> L.	Euphorbiaceae	Soro-soro	1	-	-	Ear problem	Lf	Pounding/ crushing	Internal
029	<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	Sulsuldong/ Pobreng Kahoy	1	-	-	Sprain	Wh	Poultice	External
030	<i>Gliricidia sepium</i> (Jacq.) Walp.	Luguminosae	Kakawate	2	0.11	2	Scabies, wound	Lf	Poultice	External
031	<i>Graptophyllum pictum</i> (L.) Griff	Acanthaceae	Morado	4	0.22	4	Hoarseness, nasal congestion, tonsillitis, bruises, swollen muscles Rectal inflammation, swollen muscles	Lf Lf	Poultice Heated directly	External External
032	<i>Gynura procumbens</i>	Compositae	Ashitaba/ Miracle Plant	2	0.11	6	Cough, nasal congestion,	Lf	None	Internal

	(Lour.) Merr.						asthma, tuberculosis, diabetes, constipation				
033	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Gumamela	1	-	-	Wound Boils	Lf Lf	Poultice Poultice	External External	
								Fw	Pounding/ crushing	External	
034	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Suwag (Suob)-kabayo	2	0.11	1	Abdominal pain	Lf	Decoction	Internal	
035	<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae	Kogon	1	-	-	UTI	Rt	Decoction	Internal	
036	<i>Ixora coccinea</i> L.	Rubiaceae	Santan	1	-	-	Lung problem	Fw	Decoction	Internal	
037	<i>Jasminum sambac</i> (L.) Sol.	Oleaceae	Sampaguita	5	0.28	2	Eye problem	Lf, Fw	Decoction	Internal	
							Constipation	Lf, Fw	Decoction or maceration	Internal	
038	<i>Jatropha curcas</i> L.	Euphorbiaceae	Tuba-tuba/ Mirasol	9	0.50	3	Swollen muscles, fever, sprain, <i>lamig</i> , headache, fracture, rheumatism	Lf	Poultice	External	
							Wound, fracture	Rt	Poultice	External	
039	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Banaba	3	0.17	3	<i>Lamig</i> UTI, hypertension, diabetes	Rt Lf, Bk	Decoction Decoction	Internal Internal	
040	<i>Lantana camara</i> L.	Verbenaceae	Kantutay	1	-	-	Indigestion	Lf	Directly heated	External	
041	<i>Mangifera indica</i> L.	Anacardiaceae	Manggang Kalabaw	1	-	-	Diarrhea	Lf	Decoction	Internal	
042	<i>Manilkara zapota</i> (L.) P. Royen	Sapotaceae	Tsiko	1	-	-	Dysmenorrhea	Lf	Decoction	Internal	
043	<i>Mentha arvensis</i> L.	Lamiaceae	Herba Buena	1	-	-	Wound	Lf	Tincture	External	
044	<i>Mimosa pudica</i> L.	Leguminosae	Makahiya	1	-	-	Shyness	Wh	Bathed	External	
045	<i>Momordica charantia</i> L.	Cucurbitaceae	Ampalaya	2	0.11	2	Abdominal pain, cough	Lf	Pounding/ crushing or decoction	Internal	
046	<i>Moringa oleifera</i> Lam.	Moringaceae	Malunggay	4	0.22	5	Lactation, hypertension, diabetes	Lf	Infusion	Internal	
							Gastrointestinal and liver problems	Lf, Bk, Rt	Decoction	Internal	
047	<i>Muntingia calabura</i> L.	Muntingiaceae	Aratiles	1	-	-	Cough	Lf	Maceration	Internal	
048	<i>Musa paradisiaca</i> L.	Musaceae	Saging	2	0.11	2	Diarrhea, dehydration	Lf	Decoction	Internal	
							Wound	St	Poultice	External	
049	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Sulasi	3	0.17	1	Relapse Wound	Lf Lf	Bathed Poultice	External External	
050	<i>Orthosiphon aristatus</i> (Blume) Miq.	Lamiaceae	Balbas-pusa/ Tahebo	1	-	-	Hypertension	Lf	Decoction	Internal	
051	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan	5	0.28	4	Diarrhea, abdominal pain, hypertension, kidney problems	Lf	Decoction	Internal	
052	<i>Peperomia pellucida</i> (L.) Kunth	Piperaceae	Pansit-pansitan	5	0.28	2	Hypertension, uric acid	Lf, St	Decoction, infusion or none	Internal	
053	<i>Persea americana</i> Mill.	Lauraceae	Abokado	3	0.17	2	Diarrhea	Lf, Bk	Decoction or infusion	Internal	
054	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Sampa-sampalukan	2	0.11	1	Kidney problems	Lf	Decoction	Internal	
055	<i>Phyllodium pulchellum</i> (L.) Desv.	Leguminosae	Payang-payang	1	-	-	Dizziness	Lf	None	Internal	
056	<i>Physalis minima</i> L.	Solanaceae	Unti	1	-	-	Lactation	Lf	None	Internal	
057	<i>Piper betle</i> L.	Piperaceae	Litlit/ Ikmo	6	0.33	4	Fever, infection	Lf	Pounding/ crushing	Internal	
							Skin diseases	Lf	Decoction	External	
							Cough	Lf	Bathed	External	
							Fever	Lf	Poultice	External	
							<i>Lamig, bati</i>	Lf	Poultice	External	
							<i>Lamig</i> , rheumatism	Lf	Tincture	External	
058	<i>Plectranthus amboinicus</i> (Lour.)	Lamiaceae	Oregano/ Klabo	12	0.67	3	Nasal congestion, abdominal pain,	Lf	Decoction, pounding/	Internal	

059	Spreng. <i>Plectranthus scutellarioides</i> (L.) R. Br.	Lamiaceae	Mayana	4	0.22	2	blue baby, cough Bruises	Lf	crushing or none Poultice	External
060	<i>Premna odorata</i> Blanco	Limniaceae	Alagaw	2	0.11	2	Cough	Lf, Fw	Decoction	Internal
061	<i>Psidium guajava</i> L.	Myrtaceae	Bayabas	9	0.50	3	Heart problem Heart problem Diarrhea, ulcer	Lf Lf Lf, Rt	Decoction Bathed Decoction or none	Internal External Internal
062	<i>Punica granatum</i> L.	Lythraceae	Granada	2	0.11	1	Wound <i>Suob</i> Goiter	Lf Lf Lf	Decoction Steamed Decoction	External External Internal
063	<i>Raphanus sativus</i> L.	Brassicaceae	Labanos	1	-	-	Diabetes	Rz	Pounding/ crushing	Internal
064	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Serpentina	3	0.17	1	Diabetes, uric acid	Lf	Decoction or infusion	Internal
065	<i>Rosa spp.</i>	Rosaceae	Rosas	1	-	-	Eye problem	Fw	Maceration	Internal
066	<i>Senna alata</i> (L.) Roxb.	Leguminosae	Akapulko	5	0.28	2	Skin diseases, wound	Lf	Poultice or pounding/ crushing	External
067	<i>Smalanthus sonchifolius</i> (Poepp.) H. Rob.	Compositae	Yacon	1	-	-	Diabetes, arthritis, abdominal pain	Lf	Decoction	Internal
068	<i>Streblus asper</i> Lour.	Moraceae	Kaliyos	1	-	-	Insect bite Early stage of cancer	Rz Lf Lf, St	None Poultice Bathed	Internal External External
069	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Duhat	3	0.17	5	Bruises, swollen muscles Diabetes Diarrhea	Bk Rt Bk	Poultice Decoction Decoction	External Internal Internal
070	<i>Tabernaemontana pandacaqui</i> Lam.	Apocynaceae	Kampupot/ Pandakaki	3	0.17	2	Thorn got underneath skin Liver problems	Sp Wh	None Decoction	External Internal
071	<i>Terminalia catappa</i> L.	Combretaceae	Kapili	1	-	-	Flu	Lf	Decoction Pounding/ crushing	Internal External
072	<i>Tinospora crispa</i> (L.) Hook.f. & Thomson	Menispermaceae	Makabuhay	1	-	-	<i>Bati</i> Sickly child	Lf Lf	Bathed Bathed	External External
073	<i>Vernonia cinerea</i> (L.) Less.	Compositae	Tagulinao	2	0.11	2	Eye problem	Lf	Bathed	External
074	<i>Vitex negundo</i> L.	Lamiaceae	Lagundi	11	0.61	2	Cough Cough	Lf Lf	Infusion Decoction or pounding/ crushing	Internal Internal
075	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Luyang Tagalog	3	0.17	2	Cough, <i>lamig</i> Fever Body pain	Lf Lf Rz	Bathed Poultice Poultice	External External External
076	Unidentified	-	Ilas	1	-	-	Abdominal pain, rheumatism Kidney problems	Rz Rz	Tincture Decoction	External Internal

^a UR refers to the number of mentions of use per plant species.

^b UV was only determined for medicinal plants that were mentioned by at least two informants or those with at least two use-reports.

^c Number of ailment categories reported out of 12 ICD-10 categories listed in Table 7. Number of categories was considered when medicinal plants were mentioned by at least two informants.

^d Bk, bark; Fr, fruit; Fw, flower; Lf, leaf; Rt, root; Rz, rhizome; Sd, seed; Sp, sap; St, stem; Wh, whole plant.

Appendix 3. The number of use-reports and their proportion (%) of total uses for medicinal plant parts used, their preparation and route of administration.

PARTS ^a	ROUTE	METHODS OF PREPARATION																TOTAL							
		Nothing	Pounding	Heating	Steaming	Decoction	Infusion	Maceration	Tincture	Poultice	Compress	Bathed													
Bk	Ext.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.63%	0	0.00	0	0.00%	1	0.63%				
	Int.	0	0.00	0	0.00	0	0.00	5	3.16	1	0.63	0	0.00	0	0.00%	0	0.00	0	0.00%	6	3.80%				
	Total	0	0.00	0	0.00	0	0.00	5	3.16	1	0.63	0	0.00	0	0.00%	0	0.00	0	0.00%	7	4.43%				
Fw	Ext.	0	0.00	1	0.63	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00%	0	0.00	0	0.00%	3	1.90%				
	Int.	0	0.00	0	0.00	0	0.00	4	2.53	0	0.00	1	0.63	0	0.00%	0	0.00	0	0.00%	5	3.16%				
	Total	0	0.00	1	0.63	0	0.00	4	2.53	0	0.00	1	0.63	0	0.00%	0	0.00	0	0.00%	8	5.06%				
Fr	Ext.	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	1	0.63%	2	1.27%				
	Int.	4	2.53	0	0.00	1	0.63	0	0.00	2	1.27	0	0.00	1	0.63	0	0.00	0	0.00%	8	5.06%				
	Total	5	3.16	0	0.00	1	0.63	0	0.00	2	1.27	0	0.00	1	0.63	0	0.00	1	0.63%	13	6.33%				
Lf	Ext.	2	1.27	3	1.90	5	3.16	1	0.63	2	1.27	0	0.00	2	1.27%	2	13.29% ^b	0	0.00	1	9.49% ^b	5	32.28% ^d		
	Int.	6	3.80	7	4.43	0	0.00	0	0.00	3	1.90	7	4.43	3	1.90	0	0.00	0	0.00%	0	0.00%	5	34.18% ^d		
	Total	8	5.06	10	6.33	5	3.16	1	0.63	5	3.16	7	4.43	3	1.90	2	13.29% ^c	0	0.00	1	9.49% ^c	15	66.46%		
Rt	Ext.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.63%	0	0.00	0	0.00%	1	0.63%				
	Int.	1	0.63	0	0.00	0	0.00	5	3.16	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	6	3.80%				
	Total	1	0.63	0	0.00	0	0.00	5	3.16	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	7	4.43%				
Rz	Ext.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	1.27%	2	1.27%	1	0.63	0	0.00%	5	3.16%		
	Int.	1	0.63	1	0.63	0	0.00	2	1.27	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	0	0.00%	4	2.53%		
	Total	1	0.63	1	0.63	0	0.00	2	1.27	0	0.00	0	0.00	2	1.27%	2	1.27%	1	0.63	0	0.00%	9	5.70%		
Sp	Ext.	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	1	0.63%				
	Int.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	0	0.00%				
	Total	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	1	0.63%				
Sd	Ext.	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	1	0.63%				
	Int.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	0	0.00%				
	Total	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	1	0.63%				
St	Ext.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.63%	0	0.00	1	0.63%	2	1.27%				
	Int.	1	0.63	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	2	1.27%				
	Total	1	0.63	0	0.00	0	0.00	1	0.63	0	0.00	0	0.00	0	0.00%	0	0.00	1	0.63%	4	2.53%				
Wh	Ext.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.63%	0	0.00	2	1.27%	3	1.90%				
	Int.	0	0.00	0	0.00	0	0.00	3	1.90	0	0.00	0	0.00	0	0.00%	0	0.00	0	0.00%	3	1.90%				
	Total	0	0.00	0	0.00	0	0.00	3	1.90	0	0.00	0	0.00	0	0.00%	0	0.00	2	1.27%	6	3.80%				
TOTAL	Ext.	4	2.53	4	2.53	6	3.80	1	0.63	3	1.90	0	0.00	1	0.63	4	2.53	2	17.09% ^e	1	0.63	1	12.03% ^e	7	44.30%
	Int.	1	8.23	8	5.06	1	0.63	0	0.00	5	33.5	8	5.06	5	3.16	0	0.00	0	0.00%	0	0.00	0	0.00%	8	55.70%
	Total	5	10.76	12	7.59	7	4.43	1	0.63	8	35.4	8	5.06	6	3.80	4	2.53	2	17.09%	1	0.63	1	12.03%	15	100.00%

a Bk, bark; Fr, fruit; Fw, flower; Lf, leaf; Rt, root; Rz, rhizome; Sd, seed; Sp, sap; St, stem; Wh, whole plant.
 b Highest proportions for medicinal plant parts used, their preparation and route of administration.
 c Highest proportions for medicinal plant parts used and their preparation.
 d Highest proportions for medicinal plant parts used and their routes of administration.
 e Highest proportions for medicinal plant preparations and their routes of administration

ACKNOWLEDGMENT

We wish to acknowledge with deep and warm gratitude the Department of Science and Technology-Accelerated Science and Technology Human Resource Development Program (DOST-ASTHRDP) for the scholarship grant, and the local traditional healers who kindly and patiently shared their ethnomedicinal knowledge needed in this study. We would also like to thank Dr. Olivia Erin M. Buenafe, Dr. Janice A. Ragaza and Dr. Crisanto M. Lopez of Ateneo de Manila University for the insights and recommendations to improve the manuscript.

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Lloyd O. Balinado is a resident of Mendez, Cavite. He is a Magna cum Laude graduate of Bachelor of Science in Biology, major in General Biology, from Cavite State University, Indang, Cavite in 2013. With a scholarship from DOST-ASTHRDP, he then earned his Master of Science in Biology degree from Ateneo de Manila University, Quezon City in 2016.

Currently, he is a faculty member of the Department of Biological Sciences, Cavite State University, Indang, Cavite. He is interested in doing various plant research

studies.