

**ETHNOPHARMACOLOGIC DOCUMENTATION OF SELECTED PHILIPPINE
ETHNOLINGUISTIC GROUPS: THE MANGYAN (ALANGAN) PEOPLE
OF MINDORO ISLAND**

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ABSTRACT

The research study is a component project of the UP Manila Complementary and Traditional Medicine Program. It focussed primarily on the documentation of the plants being used as medicinal agents by the Mindoro (Alangan) people. Documentation and a supplementary research work related to the medicinal plants utilized by the Alangan people were undertaken. Out of the seven barangays (four in Sta. Cruz and three in Sablayan municipalities) being occupied by the Alangan tribe, five communities in Sta. Cruz were selected based on a set of criteria (i.e. the community has to be at or near a forested area; has a reputation for indigenous medical practices; and has a homogenous culture).

Forty two plants were surveyed. The local names, scientific names, taxonomic classification, therapeutic uses and process of preparation of these plants for medicinal purposes were noted. Most of the plants surveyed and identified were found to be associated in the cure of microbe-causing diseases (the most common ailments prevalent among the Mangyans). The project conducted a follow up research (in the laboratory) by undertaking phytochemical screening and cytotoxicity test (brine shrimp lethality test) of eighteen selected plants included in the survey. Results showed that various bioactive substances were present in these plants. Each of the individual plants also had significant cytotoxic activity. Plants with the highest cytotoxicity activity were those substances taken from "matigba," "sibukaw," "polyo," "niyug niyugan," and "gita." Information related to socio-economic, political and cultural aspects of the Alangan people were also gathered.

INTRODUCTION

At the onset of civilization, man has developed innovative ways to utilize to the optimum the varied uses of plants. In fact, plants have contributed much to the development of societies, in that, these have been used as sources of food, clothing, and shelter. More importantly, the science of botany, pharmacy, and medicine could not have prospered incredibly had it not been for the discovery that plants can also be used as medicines.

Utilizing plants as sources of medicines has been existing even before the Philippines has been discovered. During the age of herbals, medicines from plants have become the common sources of drugs for cure of particular ailments. Herbalists and ancient medicine men have invariably associated some plants to cure ailments of the human organs based on the structure (morphology) of the plants, as in the shape of the leaf (e.g. heart-shaped leaves for heart-related ailments). Though some of these notions may deem unscientific, traditional medicine (as it is known when using plants as medicines) have progressed through time.

In the Philippines, traditional medicine (or folklore medicine) has been widely practised even during the pre-Spanish period owing to the rich experiences of our “arbularios” in utilizing the abundance of natural resources for medicinal purposes. The archipelagic nature of the country has contributed much to the diverse flora of various ecosystems. The forest ecosystem, particularly the tropical rainforest, has been utilized as a rich source of plants with therapeutic activity, aside from being tapped for food, clothing, shelter, and other commercial/ industrial purposes.

Most Filipinos, especially those in the rural areas belong to the marginalized groups. Thus, medicinal plants are more popular than commercially prepared drugs, among impoverished sectors of society. These are relatively cheaper, more available, and have been confirmed by traditional herbalists (“arbularyos” or medicine men) of their potency.

Indigenous groups (ethnic or cultural groups) have been known to be practising traditional medicine for generations and generations. These practices have been an important component of their rich heritage.

Among the indigenous groups, the Mangyans of Mindoro Islands have been reported to have extensively practised ethnomedicine. They have been recognized as the original settlers of Mindoro, who inhabit the tropical rainforests of the island (as in Mt. Halcon). This ethnic group consisting of several tribes have depended on plants for their basic needs, such as, for food, clothing, shelter and medicines.

With the onslaught of development, natural resources from different ecosystems have continuously been utilized in the name of progress. The tropical rainforest of Mindoro Island is no exemption as far as its being a threatened habitat. Numerous species of plants (and animals) especially the endemic species, have been endangered or have been

rendered rare or extinct, by virtue of undue mismanagement of forest resources. Environmentalists, botanists, and anthropologists specifically are waging a war against time and even against influential sectors of society and foreign bioprospectors, in an effort to preserve the remaining forests, home to many medicinal plants and the Mangyans. Thus, in preserving the biodiversity in Mindoro, essentially, the cultural practices of the Mangyans, to include their traditional medicinal practices, are also being preserved. Like the Tasadays of Mindanao, the Mangyans have treated Mother Nature with utmost respect. They have harnessed forest resources for medicinal purposes in a sustainable manner. However, logging activities and acculturation (continuing influences of lowlanders to the Mangyan culture) have been a continuing threat to the forest ecosystem and to the culture and survival of the Mangyan people as an indigenous group.

As there is a continuing national program to preserve the respective cultures of indigenous groups, special attention has been geared towards the documentation of the medicinal plants being utilized by the Mangyans. Information on whether these plants have been scientifically confirmed or not are inadequate.

Since secondary metabolites are basically the active principles responsible for the therapeutic property of medicinal plants, preliminary phytochemical screening has been utilized to substantiate further the reported potency of these plants. For this particular research undertaking, focus was on the Alangan, one of the tribes of the Mangyans. It has the following objectives:

1. to survey and document the various medicinal plants and other natural products being used by the Mangyans, especially the Alangan tribe;
2. to document the beliefs and practices of the Mangyan (Alangan) people on health disease and healing;
3. to undertake preliminary phytochemical and cytotoxicity tests of selected ethnobotanical medicines reported to have potential anti-microbial properties (this is a supplementary objective relative to the first objective).
4. (as long-term objectives in line with the research umbrella under the Traditional and Complementary Medicine Program)
 - a. to assist in the advocacy campaign to preserve the ancestral homeland of the Mangyan (Alangan) people, as well as, the biodiversity of the ecosystems;
 - b. to help in the promotion of health of the Mangyan (Alangan) through health education;

As Mangyans have had negative impressions of previous health workers operating within their area, the proponent saw the need to initially establish good rapport with members of the Council of Elders ("kuyay"). This critical activity paved the way in achieving the primary objective, that is, the documentation of the medicinal plants used by the Alangan.

people. However, during the duration of the project, there were problems with respect to security. The sites became the same perimeter areas where there were military and CPP NPA encounters. This is not to mention that in one of the scheduled field activities, a low depression weather condition developed into a strong storm. This prevented the research group to go further deep into the mountainous forest interiors.

As a consequence, the original schedule of activities was offset by these developments at that time. Nonetheless, the project took the initiative to undertake phytochemical screening and cytotoxicity tests (brine shrimp lethality assay) in the laboratory to supplement information on selected plants included in the survey. Regardless, the principal objective to document the medicinal plants used by the Alangan people was attained.

The second objective was also achieved. With the assistance extended by the Council of Elders, the beliefs and practices of the tribe on health, disease, and healing were documented. Data on these aspects were derived from the medicine man and a few elements of the community as they were the only ones given the blessings of the Council of Elders to provide such information. Information related to the socio-economic, political and cultural profile of the Alangan people were also gathered.

While the objectives related to advocacy work and health promotion activities were mentioned, the first phase of the project was solely for ethnopharmacologic documentation. For clarification, the one-year approved research was allotted only for documentation of ethnopharmacologic practices of the Alangan tribe. The other objectives were part of the overall directions of the ethnopharmacologic documentation research program. Based on the work plan indicated under methodology, the activities undertaken were from numbers 1-8. Numbers 9-10 of the work plan were not attainable as these were not inclusive of the budgetary allocation. Besides, the research was more focused on the principal objectives 1-2. Objective 3 was related to objective number 1. While this third objective was not included in the original plan, the project took the initiative to undertake the tests on selected plants to determine the feasibility of adopting the tests for future studies. During time of collection, seven of the selected plants were sterile. Thus, the number of plants subjected to the tests was limited to eleven.

While there has been much work made to attain the objectives of the project, there is still need to undertake activities related to ethnopharmacology. It has been recognized that there is an inherent difficulty in securing the necessary information. One physical obstacle is the distance from the center of activity. To reach the Mangyan tribe, it means strenuous hiking to far flung areas. Aside from this, rapport with the specific tribe is a very vital tool to secure these related information. This requires that the project has to have a direct communication and regular coordination with the Council of Elders of the Alangan tribe in this case. One cannot simply go to site and undertake research work. An approval from the Council is mandatory. Otherwise, nothing will come out of the research effort. Essentially, the project takes the community-based approach. It has employed the services of a locally-based research/field assistant. He is a Mangyan himself who has established a good track record and has won the confidence of the Alangan tribe,

especially those among the Council of Elders. This move has facilitated the implementation of the project.

MATERIALS AND METHODS

A workplan was drawn which included the following activities:

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| 1. Selection of communities* | Five communities in Sta. Cruz were selected out of the seven barangays being occupied by the Alangan people (four in Sta. Cruz and three in Sablayan municipalities) |
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*Criteria in selecting study sites.

- the community has to be at or near a forested area
- has a reputation for indigenous medical practice
- has a homogenous culture

- | | |
|--|--|
| 2. Social Preparation | <ul style="list-style-type: none">- Initial link with the community contact for the Alangan tribe through the Council of Elders- Consultation/coordination with the contact and Council of Elders- Letter addressed to local government seeking permission to undertake research was made- Permits from the Committee on Biodiversity related bioprospecting issues were acquired |
| 3. Preparation of study instruments | <ul style="list-style-type: none">- Set of questions were drawn related to profiling the Alangan people/ Mangyans- Technical skills related to collection and documentation of plants were shared with the research assistant/ field assistant |
| 4. Field documentation | <ul style="list-style-type: none">- Meeting with Council of Elders- Field collection facilitated by local guides |
| 5. Collection of materials
(Appendix 1) | <ul style="list-style-type: none">- Information from primary resources (interviews/informal meetings) and from secondary sources were gathered- Botanical specimens were collected following the protocol for taxonomic collections |

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| 6. Identification of materials | - Made use of taxonomic references
- Confirmations were done through the Philippine National Museum |
| 7. Phytochemical screening
Cytotoxicity test/ Brine Shrimp
Lethality test (Appendix 2/3) | - Undertaken in a laboratory of the biology department CAS, UPM |
| 8. Drafting of the report | - Undertaken by the investigators |
| 9. Community health education | - No fund allocation for the first year of the research so this was not attainable for this period |
| 10. Advocacy | - Considered initiating a livelihood project for the community but funding has to be sourced from another project (a new proposal) as the major activity of this present research was on the documentation of medicinal plants used by the Alangan |

Out of the forty eight plants surveyed, eighteen of these plants were considered for phytochemical and cytotoxicity. However, since seven of these eighteen plants were sterile, the number of plants actually subjected to the tests was eleven (Table 3).

Before the actual tests were done, plants were collected following the protocol in taxonomy in making plant collections and documentations (Appendix 1). Specimens of the eleven plants were collected and stored properly in secured plastic bags (to prevent dessication). These were subjected to the following tests: presence of tannins, glycosides, reducing substances, alkaloids, plant acids, flavonoids, and saponins. Results were observed and recorded based on the presence or absence of the chemical substance in question. The procedure was adopted from the phytochemical test protocol made by Harbourne. Brine Shrimp test was conducted at different doses of the extracts of selected plants. Data were statistical analyzed using factorial analysis and ANOVA.

RESULTS

Geographic location of the area being occupied by the Alangan people

The Alangan people is one of the Mangyan groups inhabiting wide areas around Mt. Halcon, mostly in the northern part of the islands (Figure 1). These areas fall under the jurisdiction of the municipalities of Naujan, Baco and Victoria, all in Mindoro Oriental, and in Sta. Cruz and Sablayan, in Mindoro Occidental.

The community being occupied by the Alangan people in Mindoro Occidental lies at the eastern portion of the municipalities of Sta. Cruz and Sablayan. It is bounded in the west by Sta. Cruz along Mindoro Strait; in the north, by the town of Mamburao; and in the south, by the town of Sablayan. The ancestral domain of the Alangan people is traversed by big rivers, to include Salagan river, Pol river, and Annay river. Its boundary lies along the Salagan river (in Sta. Cruz) and Annay river (in Sablayan town).

Sta. Cruz occupies the second largest land cover of Mindoro Occidental, with an area of 68,140 hectares. Of this total area, 60,003 hectares are utilized for agriculture; 7000 hectares for pastureland; and 55,137 hectares reserved as mountainous area. The ancestral domain of the Alangan people covers 70% of this uncultivated, mountainous area.. The other area covered by the ancestral domain of the Alangan tribe is within the jurisdiction of Sablayan. The terrain in this site is characterized by small plains, hilly areas, and mountainous forests. Seven barangays (4 in Sta. Cruz; 3 in Sablayan) fall within the jurisdiction of the ancestral domain of the Alangan (Table 1).

A Profile of the Alangan People

Socio-economic Aspects

Despite the poor living conditions in life of the Alangan tribe, they are basically a happy and contented people. Like their forefathers, they have maintained their simple way of life (quite unaffected by influences of “civilization”) and have a friendly and hospitable disposition. They are basically nomadic, depending on what resources they could use from their natural environment.

The tribe is classed as an impoverished, marginalized group of people. They have been engaged in slash and burn type of agriculture. They have no concept of individual land rights. Whatever land an individual cultivates, the land is community owned. The right to plant is based on the land clearing the individual has made. Land to the Alangan is sacred as this is viewed as the ashes of their forefathers, apart from it being used as a source of livelihood. Some of the tribe members are engaged in sedentary farming. Their subsistence depends on staple food, fruits, and root crops (e.g. bananas, cassava, *kamote*, *nami*, ginger, coffee, and coconut). Others are involved in handicrafts, illegal logging, seedling nursery, cash crops, and abaca trading (Provincial Profile of Oriental Mindoro, 1994-1999).

Government System

Practically, the people of Alangan is governed by the Council of Elders, better known as “kuyay.” The eldest member of the Council is known as “pinakakuyay.” The eldest becomes the head and the responsible element who maintains the peace and order condition of the community.

Educational and Cultural Aspects

The Alangan people are one of the most illiterate and unschooled people of the country. They have an educational attainment of only 2%. Even if the young members of the community are now schooled, literacy is still low. Some members of the tribe would prefer that their youth be not formally schooled. They fear that formal training might run counter to their customs and traditions. There is a strong belief among them that the best education is through “learning things from experience” as guided by the elders.

They are staunch believers that the world is controlled by a complex of omnipresent spiritual forces (Saturay, 2001). These spirits, be good or bad, greatly influence their daily lives. These beliefs are associated with colorful rituals and ceremonies. Each of the Mangyan tribes of Mindoro has its own distinct religious beliefs and practices. The Mangyans, in general, believe in a Supreme Being known as “Ambawao” (Sarubay, 2001). Despite this belief, they are still paganistic, as they attribute living souls to inanimate objects and to natural phenomenon. Burial ceremonies in forested areas are only attended by the malefolk. However, these beliefs have been diluted by the influx of Christian influences, through the missionaries.

Mangyans are basically monogamous although divorce (“balinawan”) is allowed. Divorce can be granted if the partner is lazy and/or irresponsible; if he/she commits adultery; or the wife cannot bear a child or the husband is found impotent.

Traditional and Medical Practices

It has been centuries that the Alangan people have been closely associated with nature. Their culture and traditions have in fact been rooted to nature. Their medical practices have been acquired from their forefathers. Their living in remote mountainous areas have rendered commercial medicines inaccessible. They have relied much on the forest resource as source of their medicines. The “kuyay” plays an important role as he is also recognized as the medicine man. In collected materials for medicinal purposes, careful harvesting is observed. Various plant parts are utilized for particular cure for certain ailments. These may be applied internally or externally.

Results of the Survey and Tests of Plants used by Alangan Tribe as Medicinal Plants

A total of forty two plants have been surveyed and documented as the plants used by the Alangan people for medicinal purposes. Tables 2 / 2A show the list of medicinal plants documented by the project. Included in the table are the common names used by the Alangan, the plant part used, therapeutic purposes, and mode of intake (decoction, direct application, etc.). Out of the 42 plants locally identified, only eleven of these were identified taxonomically as most of the plants had no flowers during time of collection (Table 3)

Out of these forty two plants, eighteen were subjected to phytochemical screening and cytotoxicity test (brine shrimp lethality test). Extracts taken from the remaining 24 plants collected fell short of the prescribed amounts for specific tests (Harbourne, 1984).

In Table 4, the results of the phytochemical screening test in the plants tested are presented. These show the particular reactions of the substances taken from the eighteen plants, to include three confirmatory tests for alkaloids, two tests for saponins, and one test each for tannins, glycosides, reducing substances, plant acids, and flavonoids. The three confirmatory tests for alkaloids include a) Mayer's Reagent (mercuric potassium iodide test solution), b) Valser's Reagent (mercuric iodide test solution, and c) Wagner's Reagent (iodide test solution). To test for the presence of saponins, two tests were undertaken, namely, a) froth test and b) Liebermann-Burchard Differentiation test.

In the study, tannins were found in trees like "balite," "gita," "sibukaw," "tipulo," and "matigba." These substances were also found in herbaceous and small trees, as in "alagao," "irat," "kamaria" and "suag."

Glycosides were present in "balita," "balugo," "batino," "bungarngar," "gita," "niyug niyugan," "irat," "matigba," "putat," "suag kabayo," and "sibukaw." All plants except "balugo," "batino," "putat," and "tigaw," contain alkaloids. Simple organic acids were found in "alagaw," "alinis," "balite," "barigosa," "bungarngar," "gita," "niyug niyugan," "kamaria," "matigba," "polyo," "sibukaw," "tigaw," and "tipulo."

Reducing sugars (as potential source of Vitamin B) were present in "alagaw," "galinis," "barigosa," "batino," "bungar ngar," "gita," "irat," "kamaria," "matigba," "polyo," "putat," "sibukaw," "tigaw," and "tipulo." Generally speaking, most dicots were expected to contain saponins. However, in "balugo," "batino," "putat," and "suag kabayo," saponins were absent. Only "kamaria" yielded positive for flavonoids.

Table 5 shows the summation of the percentage of brine shrimp lethality at different doses of extracts derived from selected plants (that were subjected to the tests). ANOVA table for factorial analysis is presented in Table 6. No significant effects between plant extracts on its effect on the percentage brine shrimp lethality were noted. However, when individual plant concentrations were taken into account, there was a significant effect on the percentage lethality of brine shrimps. The F-values were found to be greater than the critical F values at .05% level.

DISCUSSION

Although there were forty two plants surveyed, only eighteen were considered for the tests. Identification of the plants collected proved difficult owing to the absence of flowers (a critical basis in identifying the plants). Most of the plants were sterile at the time of collection. The prevalence of sterile plants (absence of reproductive parts like flowers) can be attributed to the climatic conditions at the time of research. The duration of short day /long day and dark interval exposure on vegetative parts (photoperiodicity) during the time of sampling could not facilitate the flowering response. Other factors

being considered include prevailing climatic (water, temperature, wind) and soil conditions. These environmental conditions would favor vegetative growth over that of the flowering response (Devlin 3rd ed.).

Prescribed amounts of extracts were required for these plants to be subjected to specific tests (Harbourne, 1984). There were only a few available plant samples of the 24 plants (not subjected to the tests) that were found in the area during time of collection. Extracts taken were not sufficient for the specific tests.

Most of the plants subjected to the tests were found to have activity against certain microbes. The number of plants utilized with anti-microbial activity reflects the frequently used /demands of the Mangyans for these particular plants. The most common ailment afflicting the Mangyans are diseases caused by microbes. The selected plants contain laticiferous substances in their barks and leaves. These substances known as latex are typically found in plants belonging to family Euphorbiaceae, Moraceae, Cannabinaceae, Apocynaceae, and Asclepiadaceae. The therapeutic activity of the plants have been attributed to certain latex substances in laticiferous cells (Cantoria, 1999).

Results demonstrate the presence of these bioactive substances in these particular plants (Table 4). Bioactive molecules could either be tannins, glycosides, reducing substances, alkaloids, flavonoids, and saponins. Collectively these substances are known as secondary metabolites found in plants (Hopkins, 1995). Chemotaxonomic evidences show that only certain plant groups possess these bioactive substances (Cantoria, 1999). Through initial phytochemical screening tests, plants can be grouped and classified accordingly based on certain affinities with other plant groups by virtue basically of the presence of secondary metabolites in related plant groups (Singh, 1999).

Factorial analysis (through ANOVA) showed that there was no significant effect between plant extracts on its effects on the percentage of brine shrimp lethality. The computed F value (0.45) is less than the critical F value at 1.52. This implies that the different plant extracts have almost the same effect on the percentage lethality of brine shrimps (Dantic, 1998).

Nonetheless, if one considers the individual plant concentration, this showed a significant effect on the percentage lethality of brine shrimps. This can be gleaned from the F value being greater than the critical F value. It was also observed that the variation of percentage lethality of brine shrimps can be attributed to the different concentrations of plant extracts (Dantic, 1998). In the control set up, lethality of brine shrimps incubated in varying concentrations of extracting solvent showed that lethality was almost the same in all concentrations. The extracting solvent had no effect on the lethality of the brine shrimps.

CONCLUSIONS

There were forty eight plants surveyed that were utilized by the Mangyan Alangan tribe for various medicinal purposes. The Council of Elders facilitated in the gathering of

information, aside from the data derived from interviews of members of the Council. Of the forty eight plants locally identified, 18 of these were considered for phytochemical and cytotoxicity tests. Various bioactive substances were detected in these plants selected for the actual tests. These included saponins, alkaloids, glycosides, reducing substances, plant acids, tannins, and flavonoids. However, only 11 of the collected plants were taxonomically identified. Other plants surveyed and locally identified had no flowers (sterile) during time of collection. Note that in undertaking taxonomic studies, flowers are more reliable basis for identification and classification.

Statistical analysis showed that each of the plant extracts exhibited cytotoxic activity. Significant differences were noted in various concentrations of the plant extracts. This implies that with an increase in concentration / dose of the extracts, percentage lethality also increases. The cytotoxic activity could be dose/concentration dependent. Since there was no significant difference in the summation of lethality percentage of brine shrimps to the extracts, the plant extracts had similar cytotoxic activity. However, when taken separately, all plant extracts had significant cytotoxic activity at 0.5 level.

The presence of bioactive substances affect the degree of cytotoxicity, i.e. plants containing most of the bioactive components, exhibit a high summation of percentage lethality. Among the plants studied, “matigba,” “sibukaw,” “polyo,” “niyug niyugan,” and “gita,” exhibited high percentage lethality since they contain most of the bioactive elements considered for this research.

Essentially, the Alangan tribe is one of the few remaining indigenous people that has not been much influenced by external factors, such as urbanization. This can be rooted out from their close affinity with Nature. They exemplify the few human populations that lead a sustainable lifestyle (in their own way). Even their culture and traditions have been honed from lessons from nature. Thus, their medical practices acquired from their forefathers are still the same practices being observed by present-day Alangan tribesmen. They will still prefer the use of medicinal plants rather than those commercially prepared medicines. Since they are dependent on the “fruits” of the forest, for food, medicine and clothing, they have struggled to hand this legacy of man being one with nature to younger generations. The “kuyay” (the medicine man) assumes a very influential in valuing life and nature.

TABLE 1. Jurisdiction of ancestral lands occupied by the Alangan Tribe,
Mangyans, Mindoro Occidental

MUNICIPALITY	BARANGAY	SITIO
1. Sta. Cruz	Barahan	Agkayangon
		Bugtonghago
		Kadaraga
		Kadyokbato
		Kaibaron
		Karino
		Kimamba
		Dingin
		Olanghuan
		Sili
		Tagbungan
		Tubuhan
		Tumaka
		Umalihan
		Balatikan
	Dayap	Barahas
		Dapdap
		Kapauhan
		Suksuk
		Sulpan
	Lumangbayan	Tipalang
		Alupahan
		Balasik
		Banawang
		Banrukan
		Barokan
		Bayabasan
		Buao
		Bukyosan
		Kalasagan
		Kalsanan
		Ranranan
		Suakan
2. Sablayan	Batong Buhay	Kulasisi
		Mayba
		Pandurukan
	Pag-asa	Anmalin
		Libaga
	San Agustin	

TABLE 2. List of Medicinal Plants used by Mangyan (Alangan tribe) of Mindoro Island

Local name/ Common name	Parts used	Medicinal Function	Process
Alagao	Leaves	For cough	Decoction
Alibakbaw	Leaves and bark	For fungal infection	Direct application on infected parts
Alinis/ kogon	Roots	For fever	Decoction
Ananabang	Bark	For stomachache	Decoction
Balang Kaweng	Bark	Pain reliever	Decoction
Balatong balatongan	Leaves	For toothache	Direct application on infected tooth
Balite	Bark	For fungal infection	Direct application on infected area
Balugo	Bark and fruits	Acts as an antidote	Decoction
Banaba	Leaves	For kidney disease	Decoction
Bangkal	Leaves	For malaria	Decoction
Baribid	Leaves	For toothache	Decoction
Barigosa/ pwesto	Leaves	For stomachache	Decoction
Batino	Leaves and bark	For stomachache	Decoction
Bayabas	Leaves	For hyperacidity	Decoction
Bikal	Bark	Reddening of the eye	Decoction and application
Bungarngar	Leaves	For clotting of bleeding wounds	Direct application
Dila baka	Roots	For diarrhea	Decoction
Duhat	Bark	For bleeding stool	Decoction
Gita	Bark	For stomachache	Decoction
Irat	Leaves	Laxative	Decoction
Kaitkes	Bark	For boils	Direct application on the boils
Kakawati	Leaves	For skin infection	Direct application on the infected area
Kalingag	Leaves and bark	For fever	Decoction

(Continued TABLE 2)

Local name/ Common name	Parts used	Medicinal Function	Process
Kalit-kalit	Leaves	For fracture	Direct application to the injured part
Kamariya	Leaves	For stomachache	Decoction
Luya	Specialized roots	For aching muscles and joints	Decoction
Makahiya (babae)	Leaves	For fever	Decoction
Maribellosa	Leaves	For stomachache	Decoction
Matigba	Leaves and bark	For deep laceration	Direct application on wounds
Niyug-niyugan	Fruits	Laxative purposes	Oral intake
Papaya	Fruits	For hernia	Direct application on the testes
Polyo	Leaves	For nose bleed	Direct application on the nose
Pula awak	Leaves	For headache	Decoction
Putat	Structure in the abaxial portion of the leaves	For skin diseases	Decoction
Sambong	Leaves	For headache	Decoction
Sibukaw	Bark	Acts as an antibiotic	Decoction
Soro-soro	Leaves	For post delivery pain	Decoction
Suag kabayo	Leaves	For athletes foot	Direct application
Tigaw	Leaves	For stomachache	Decoction
Tibien	Bark	For cyst and inflammations	Direct application
Tipulo	Bark	For fever	Decoction
Walis-walis	Roots	For diarrhea	Decoction

TABLE 2A – Preliminary Listing of Plants utilized as medicines by the Mangyans
(Alangan tribe) of Mindoro Islands (Lacdan 2001, unpublished)

Common Name	Plant Part Used	Disease Treated
Alagao	Leaves	Cough
Alinis	Roots	Fever
Balite	Leaves	Fungal infection
Balugo	Leaves	Antidote
Barigosa	Leaves	Wounds
Batino	Bark	Stomachache
Bungarngar	Leaves	Wounds
Gita	Bark latex	Inflammation
Niyug-niyogan	Fruit	Helminthic infection
Irat	Leaves	Helminthic inflammation
Kamaria	Leaves	Stomachache, postnatal pains
Matigba	Bark	Deep wounds and lacerations
Pulyo	Leaves	Wounds, nosebleeding
Putat	Leaves	Skin disease
Suag kabayo	Leaves	Wounds
Sibukaw	Bark and wood	Influenza
Tigaw	Leaves	Stomachache
Tipulo	Leaves	Fever

TABLE 3. List of Eleven Plants (with flowers) with Taxonomic Identification and Classification and corresponding local names

Local name	Class	Subclass	Order	Family	Scientific name
“batino”	Magnoliataeae	Asteridae	Gentiales	Apocynaceae	<i>Alstonia macrophylla</i>
“gita”	Magnoliataeae	Asteridae	Gentiales	Apocynaceae	<i>Alstonia scholaris</i>
“tigaw”	Magnoliataeae	Asteridae	Lamiales	Verbenaceae	<i>Callicarpa sandicans</i>
“alagao”	Magnoliataeae	Asteridae	Lamiales	Verbenaceae	<i>Premna odorata</i>
“alinis”	Monocotyledonae		Poales	Poaceae	<i>Imperata cylindrical</i>
“sibukaw”	Magnoliataeae	Rosidae	Rosales	Caesalpinaceae	<i>Caesalpinia sappan</i>
“putat”	Magnoliataeae	Dilleniidae	Malvales	Malvaceae	<i>Barringtonia racemosa</i>
“balite”	Magnoliataeae	Hamamelidae	Urticales	Moraceae	<i>Ficus stipidosa</i>
“kamariya”	Magnoliataeae	Glumiflorae	Campanulatae	Compositae	<i>Artemisia vulgaris</i>
“niyug-niyogan”	Magnoliataeae	Rosidae	Myrtales	Combretaceae	<i>Quisqualis indica</i>
“polyo”	Magnoliataeae	Asteridae	Lamiales	Lamiaceae	<i>Mentha arvensis</i>