



## Medicinal plants and traditional knowledge in the Northern Mariana Islands

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### Introduction

The Commonwealth of the Northern Mariana Islands (CNMI) is located in the Western Pacific and consists of 14 islands with a total dry land area of 176.5 square miles. The three major inhabited islands are Saipan, Tinian, and Rota, which comprise about 90% of the total land mass, and accommodates the entire population of 70,000 residents. There are two native ethnic communities in the CNMI, the Chamorros and the Carolinians, both accounting for about 50% of the islands population. In these islands plants are very important resources for medicinal needs of the native ethnic communities. The Northern Marianas College Cooperative Research, Extension and Education Service (NMC-CREES) is undertaking research on medicinal plants through scientific research.

### Objective

The purpose of the current study is to record plants that have been used traditionally for medicinal purposes and to identify other plants in the islands that have been recognized and reported elsewhere in literature. These plants are being explored for

their potential utilization to benefit farmers and communities in the CNMI. Traditional Chamorro and Carolinian knowledge and uses of plants with medicinal value is being documented.

### Methodology

Three island locations, Saipan (Main Island), Rota and Tinian, were selected for the present study, since they are highly significant in terms of biodiversity and as sources of medicinal plants for local communities and traditional healers.

Continuous field trips were undertaken to the study areas and people in the community were interviewed on how they use various plants for medicinal purposes. Photos of plants and plant parts were taken and documented.

### Findings

About seventy promising plants have been identified for their medicinal value and cultural uses in the CNMI (Table 1). These include *Morinda citrifolia* (Ladda'), *Canavalia megalantha*

(Akangkan), *Colubrina asiatica* (Gssso'so), *Premna obtusifolia* (Ahgao), *Erythrina variegata* (Gaogao), *Phymatodes scolopendria* (Kahlao), *Cassia occidentalis* (Tumaga), *Asplenium nidus* (Korason

galak), and *Peperomia mariannensis* (Potpopot).

Traditional Chamorro and Carolinian medicines contain plant materials from single or more plant species. Investigations are ongoing on the types of plants or combinations of plants, or plant parts are suitable for various medicinal preparations.

Traditional knowledge about medicinal plants is passed down from generation to

generation generally within the immediate family by word of mouth, and always to selected individual(s) in the family. Because of the changing family structure, new lifestyles, increased spread of modern synthetic medicines and hospital based medical care, knowledge and skills in traditional medicine is disappearing rapidly and is in danger of extinction.

#### Discussion

The valuable attributes or roles of medicinal plants are easy to define. Besides medicinal values and cultural identity, some of the plants that have been identified have nutritional values, including commercial potential in the local markets. Some are traditionally consumed or used by local community as specialty crops or products, or as local value-added products, while others have potential for export and tourism marketing. Factors that affect productivity and enhancement of the medicinal plants in the CNMI include

- (1) Lack of information and knowledge of propagation;
- (2) Lack of protection from insect pests and diseases;
- (3) Lack of good quality planting materials;
- (4) Natural disasters including droughts and typhoons
- (5) A switch in food preferences from traditional foods to imported foods;
- (6) Insufficient water resources;
- (7) High production costs due to increased labor and management input;
- (8) Shrinking economy;
- (9) Urban lifestyles.

The survey helped in bringing to light the uses of plant species whose utility and potential are little known. The study has also increased awareness about the role of the community in the conservation and protection of medicinal plants. To meet the challenges and to overcome constraints associated with exploitation of medicinal plants, NMC-CREES is implementing programs on the production of disease free and high quality planting materials propagated through tissue culture, clonal propagation of 'elite' genotypes, *in situ* and on-farm conservation and protection from plant pests and diseases. Government policies and strategies are needed to promote the dissemination of information on medicinal plants and the sharing of traditional knowledge.

Table 1: Medicinal plants of the Northern Mariana Islands and their traditional uses.

| Plant Name   |  |               | Location/<br>Habitat         | Plant parts<br>used for<br>medicine | Uses   |
|--|--|---------------|------------------------------|-------------------------------------|--|
| Family/Scientific Name                                     | Common Name                                      | Local Name    |                              |                                     |  |
| Acanthaceae<br><i>Blechum brownei</i> fo. <i>puberulum</i> | Yetbas babney,<br>blackweed, Browne's<br>blechum | Yerbas babui  | Coastal, inland              | Leaves, roots                       | Dulce for women<br>(Cleanser and child birth)                                      |
| Amaranthaceae<br>Deeringia amarantoides                    | -  | Pe'chalan     | Coastal, inland              | Roots                               | Urinary tract problems<br>and Cleanser   |
| <i>Iresine diffusa</i>                                     | Juba's bush                                      | Maiana        | Coastal / inland             | Leaves                              | Sore and Bruise<br>(external uses)   |
| Annonaceae<br><i>Annona reticulata</i>                     | Custard apple                                    | Annonas       | Inland                       | Bark, fruits                        | Dulce, Irregular<br>menstruation   |
| <i>Cananga odorata</i>                                     | Ylang Ylang                                      | Ylang Ylang   | Coastal, inland,<br>mountain | Flowers, bark                       | Pneumonia, stomach<br>ache, garlands of flowers<br>provide a 'good feel'<br>status |
| Asteraceae<br><i>Artemisia vulgaris</i>                    | Mugwort  | Yetba Buena   | Inland                       | Leaves, vines                       | Bloated  |
| <i>Eclipta prostrata</i>                                   | <u>False daisy</u>                               | Titimu        | Coastal, inland              | Leaves                              | Sore throat, Tonsillitis,<br>Bad breath,   |
| <i>Wedelia biflora</i>                                     | -  | Masiksik Tasi | Coastal                      | Roots                               | Uterus infection   |
| Boraginaceae<br><i>Heliotropium indicum</i>                | Wild Clary                                       | Batbena       | Coastal, inland              | Leaves, roots                       | Pneumonia,<br>Body ache, Bloated   |
| Celastraceae<br><i>Maytenus thompsonii</i>                 | -  | Luluhot       | Coastal, inland,<br>mountain | Leaves                              | Sore throat, Urinary tract<br>cleanser   |

| Family/Scientific Name  | Common Name            | Local Name                | Location/<br>Habitat         | Plant used for<br>medicine | Uses  |
|---|------------------------|---------------------------|------------------------------|----------------------------|---|
| Chenopodiaceae<br><i>Chenopodium ambrosioides</i>   | Mexican tea, Wormseed  | Apaso tes<br>(apachoti)   | Inland                       | Leaves                     | Bloated                                       |
| Combretaceae<br><i>Terminalia catappa</i>   | Indian/Tropical Almond | Talisai                   | Coastal, inland,<br>mountain | Leaves, nuts,<br>bark      | Uterus infection, coughs                      |
| Convolvulaceae<br><i>Ipomoea hederacea</i><br><br><i>Ipomea pes-caprae</i> sp.<br><i>brasiliensis</i>           | Ivy leaf morning-glory | Fofgo                     | Coastal, inland<br>mountain  | Leaves, vines              | Urinary tract on children                     |
|   | Morning glory          | Alaihai                   | Coastal                      | Roots                      | Dulce, Uterus, urinary<br>tract cleaser       |
| Cucurbitaceae<br><i>Lagenaria siceraria</i><br><br><i>Momordica charantia</i><br><br><i>Melothria guamensis</i> | Gourd vine             | Tagua                     | Inland                       | Leaves, fruits             | Body aches, purgative                         |
|   | Bitter-melon           | Atmagoso                  | Coastal, inland,<br>mountain | Leaves, fruits             | Phlegm extraction on<br>new born              |
|   | -                      | Ahgaga                    | Mountain                     | Leaves, Vines              | Body aches & pain,<br>Fever, Headaches        |
| Cyperaceae<br><i>Cyperus rotundus</i><br><br><i>Mariscus javanicus</i>  | Nut grass              | Cha'guan-<br>Umatak       | Coastal, inland,<br>mountain | Whole plant                | Menstruation                                  |
|   | 'Ahu'awa               | Chakchak<br>(Chachakchak) | Inland                       | Soft stem                  | Pounded stem is used as<br>a strainer for awa |
| Davalliaceae<br><i>Davallia solida</i>  | Solida fern            | Pugua' machena            | Mountain                     | Leaves                     | Urinary tract Cleanser,<br>Bloated            |
| Dioscoreaceae<br><i>Dioscorea alata</i><br><br><i>Dioscorea esculenta</i> var.<br><i>fasciculata</i>            | White yam              | Dago a'paka'              | Inland                       | Leaves, Roots              | Post surgery pain<br>reliever                 |
|   | Wild yam               | Nika                      | Inland, mountain             | Leaves, Roots              | Post surgery pain<br>reliever                 |
|   |                        |                           |                              |                            |   |

| Family/Scientific Name  | Common Name                   | Local Name                  | Location/<br>Habitat         | Plant used for<br>medicine | Uses  |
|---|-------------------------------|-----------------------------|------------------------------|----------------------------|---|
| Euphorbiaceae<br><i>Euphorbia hirta</i>                         | Garden spurge                 | Golondrina                  | Inland                       | Leaves                     | Dulce   |
| <i>Jatropha curcas</i>  | Physic nut                    | Tuba-tuba                   | Coastal, inland,<br>mountain | Leaves                     | Dulce   |
| <i>Melanolepis multiglandulosa</i><br><i>Phyllanthus amarus</i> | -                             | Alom                        | Inland mountain              | Tips (young<br>leaves)     | Urinary tract cleanser  |
|   | Chanca piedra, quebra<br>pe   | Maigo'lalo'                 | Coastal, inland<br>mountain  | Leaves, stems,<br>roots    | Dulce for women, baby's<br>gum ache, arthritis                |
| Fabaceae<br><i>Abrus precatorius</i>                            | Crab eye / Rosary Pea         | Kulales                     | inland                       | Roots, beans               | Dulce   |
| <i>Cassia occidentalis</i>                                      | Coffee senna                  | Amot tumaga'                | Coastal, inland,<br>mountain | Leaves                     | Sore throat, Bad breath,<br>Pneumonia                         |
| <i>Caesalpinia sappan</i>                                       | Wait a bit, Yellow Nicker     | Pakao                       | Coastal, inland              | Leaves, pods               | Body aches and pain<br>(lower back)                           |
| <i>Caesalpinia major</i>  | Hawaii Pearls                 | Akangkang                   | Coastal, inland              | Leaves                     | Sore throat, Body ache  |
| <i>Canavalia megalantha</i>                                     | Sappanwood, Bukkum-<br>wood.  | Sibukao                     | Coastal, inland,<br>mountain | Bark                       | Pneumonia   |
| <i>Erythrina variegata</i>                                      | Coral tree, Tiger claw        | Gaogao                      | Coastal, inland,<br>mountain | Leaves, bark               | Urinary tract infection,<br>stomach ache                      |
| <i>Entada phaseoloides</i>                                      | St. Thomas bean, Sea<br>bean  | Gogo                        | Coastal, inland              | Leaves                     | Bloated   |
| <i>Mucuna gigantea</i>  | Small sea bean                | Bayoggon dikiki'<br>(gaye') | Coastal, Inland,<br>mountain | Roots<br>Pods (beans)      | Urinary tract,<br>neurological and<br>manstruation disorders, |
| <i>Pithecellobium dulce</i>                                     | Guamachil, Manila<br>tamarind | Kamachile                   | Coastal, inland,<br>mountain | Leaves, trunk,<br>pod      | Sore throat   |
|   |                               |                             |                              |                            |   |

| Family/Scientific Name   | Common Name                            | Local Name                  | Location/<br>Habitat           | Plant used for<br>medicine | Uses  |
|--|--|-----------------------------|--------------------------------|----------------------------|---|
| Goodeniaceae<br><i>Scaevola sericea</i> (taccada)  | Half flower                            | Nanaso Kalaton<br>(gaifigu) | Coastal                        | Roots                      | Urinary tract cleanser  |
| Lauraceae<br><i>Cassytha filiformis</i>  | Cassytha, Love vine                    | Mayagas                     | Coastal, inland,<br>mountain   | Whole plant<br>(stem)      | Menstrual problems  |
| Lecythydaceae<br><i>Barringtonia asiatica</i>  | Sea Poison Tree or Fish<br>Poison Tree | Puting                      | Coastal, inland                | Leaves, fruits             | Uterus infection  |
| Malvaceae<br><i>Abutilon indicum</i><br><br><i>Hibiscus abelmoschus</i><br><br><i>Hibiscus tiliaceus</i><br><i>Thespesia populnea</i><br><br><i>Urena lobata</i> | Indian mallow                          | Matbas                      | Coastal, inland                | Leaves                     | Diarrhea, Infusion,<br>poultice or paste for<br>Boils, ulcers |
|  | Musk Mallow,<br>Ornamental Okra        | Ka'mang tasi                | Coastal                        | Leaves                     | Pneumonia   |
|  | Hibiscus tree                          | Pagu                        | Coastal, inland,<br>mountain   | Leaves, Bark,<br>trunk     | Dulce (Cleanser),<br>Bloated                                  |
|  | Portia tree                            | Banalo                      | Coastal, inland,<br>mountain   | Bark, Trunk                | Dulce   |
|  | Cesar weed                             | Dadangs'l -<br>machingat    | Inland                         | Leaves                     | Urinary tract infection                                       |
| Moraceae<br><i>Ficus prolixa</i>   | Ficus                                  | Nunu                        | Coastal / inland /<br>mountain | Roots                      | Pneumonia   |
| Myrtaceae<br><i>Psidium guavaja</i>  | Guava                                  | Abas                        | Inland, mountain               | Leaves, Fruits             | Dulce, Cleaning wounds  |
| Orchidaceae<br><i>Taeniophyllum mariannensis</i>   | Leafless orchid                        | Sanye'ye'                   | Inland                         | Leaves                     | Cultural importance   |
| Pandanaceae<br><i>Pandanus tectorius</i>   | Textile pandanas,<br>Screw pine        | Akgak                       | Coastal, inland,<br>mountain   | Leaves, Roots              | Urinary tract infection                                       |

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| Family/Scientific Name   | Common Name   | Local Name            | Location/<br>Habitat      | Plant used for<br>medicine | Uses                                   |
|--|---|-----------------------|---------------------------|----------------------------|--|
| <u>Polypodiaceae</u><br><i>Asplenium nidus</i><br><i>Phymatodes scolopendria</i>                                       | Birds nest fern                                     | Gualak (Galak Fedda') | Coastal, inland, mountain | Heart, Leaves              | Body aches & pain, Fever, Headaches    |
|  | Fern  | Kahlao                | Coastal, inland, mountain | Leaves                     | Sore throat, tonsillitis, Bad breath   |
| Piperaceae<br><i>Peperomia marianensis</i><br><br><i>Piper betle</i><br><br><i>Piper guamensis</i>                     | Peperomia   | Potpupot              | Inland, Mountain          | Leaves                     | Body aches & pain, Fever, Headaches    |
|  | Betel pepper  | Pupulu                | Coastal, inland, mountain | Leaves                     | Uterus infection                       |
|  | Wild piper  | Pupu lu-n-Aniti       | Coastal, inland, mountain | Roots                      | Body aches & Pain                      |
| Portulacaceae<br><i>Portulaca oleracea</i>   | Common Purslane, Verdolaga, Pigweed, Little Hogweed | Botdologas            | Coastal, inland, mountain | Whole plant                | Hemorrhoids                            |
| <u>Rhamnaceae</u><br><i>Colubrina asiatica</i>   | Colubrina   | Gasoso                | Coastal, inland           | Leaves                     | Head & body ache, Fever, Pain reliever |
| Rubiaceae<br><i>Hedyotis foetida</i> var. <i>marianensis</i><br><i>Morinda citrifolia</i><br><i>Psychotria mariana</i> | Hedyotis  | Paude'do'             | Coastal, inland           | Leaves, roots              | Uterus & bloated                       |
|  | Indian mulberry, Noni                               | Ladda                 | Coastal, inland, mountain | Leaves, Fruits, Roots      | Sore throat, Tonsillitis, Bad breath   |
|  | Psychotria  | Aplokating            | Inland                    | Leaves                     | Uterus problems, Bloated stomach       |
| Solanaceae<br><i>Capsicum annuum</i><br><i>Nicotiana tabacum</i><br><i>Physalis minima</i>                             | Hot pepper  | Trongkon doni' sali   | Inland                    | Leaves                     | Sore throat & Tonsillitis              |
|  | Cultivated tobacco                                  | Trongkon chupa        | Coastal, inland           | Leaves, flowers            | Uterus problems                        |
|  | Sunberry  | Tumates Cha'ka        | Inland                    | Leaves                     | Sore throat, Bad breath, Tonsillitis   |
|  |   |                       |                           |                            |  |

| Family/Scientific Name                     | Common Name                | Local Name                       | Location/<br>Habitat         | Plant used for<br>medicine | Uses                                    |
|--|----------------------------|----------------------------------|------------------------------|----------------------------|---|
| Taccaeeae<br><i>Tacca leontopetaloides</i> | Tacca root                 | Gapgap                           | Coastal, inland,<br>mountain | Root                       | Chest pain, Rashes on<br>new born,      |
| Urticaceae<br><i>Elatostema calcareum</i>  | Elatostema                 | Tupu-n-Ayuyu<br>(Nengkano'Ayuyu) | Inland, mountain             | Leaves                     | Body aches & pain,<br>Fever, Head aches |
| Verbenaceae<br><i>Callicarpa candicans</i> | American beautyberry       | Hamlag                           | Inland, mountain             | Leaves                     | Sore throat, Tonsillitis,<br>Bad breath |
| <i>Clerodendrum inerme</i>                 | Vanajai, Garden<br>quinine | Ludugao                          | Coastal, inland,<br>mountain | Leaves                     | Pneumonia                               |
| <i>Premna obtusifolia</i>                  | False elder                | Ahgao                            | Inland                       | Leaves                     | Throat infection,<br>Bodyache, Headache |
| <i>Vitex negundo</i>                       | Five leaved Chaste<br>tree | Agalonde'                        | Inland                       | Leaves                     | Irregular menstruation                  |

-, Not available

Literature cited:

Nandwani D and Edgar J DaSilva 2003. Traditional knowledge and medicine in the Marshall Islands. Teknoscience. p. 42-46

DaSilva, EDS, Murukesan V.K., Nandwani, D, Josekutty P.C and M. Taylor. 2004. The Pacific Islands: A biotech resources bank of medicinal plants and traditional intellectual property. World J. Microbiol. Biotech. 20: 903-934

Benjamin S. 1970. The Flora of Guam. Micronesica. p 658.

Traditional trees of Pacific Islands. 2006. Craig R Elevitch (ed.) Permanent Agriculture Resources, Holualoa, Hawaii, USA

Island Ecology and Resource Management. 2006. John Furey (ed.). Northern Marianas College Press. Commonwealth of the Northern Mariana Islands





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