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## RESEARCH ARTICLE

### STUDY OF DIVERSITY OF MEDICINAL PLANTS USED BY THE MARING TRIBE OF MANIPUR, NORTH EAST INDIA

<sup>1</sup>\*Rita Nongmaithem and <sup>2</sup>Ajit Kr. Das

<sup>1</sup>Department Ethnobotany and Medicinal Plants Conservation Laboratory, Assam University, Silchar-788011

<sup>2</sup>Department of Ecology and Environmental Science, Assam University, Silchar-788011

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#### ABSTRACT

An ethnobotanical programme was conducted in tribal inhabited areas of Manipur state of North-eastern India with an aim to document the indigenous knowledge of Maring community of the state. Since, the community is mostly located in hilly areas they depend heavily on plant based medicines for curing their diseases. In this study, a total of 101 plant species belonging to 50 families were collected which is used by the tribal community in curing their ailments. The study also revealed the use of some 29 new uses of plants, though earlier mentioned in other works for curing different ailments. A detailed clinical study of some promising plant will bring light in discovering new novel drugs.

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#### INTRODUCTION

Herbal medicines have been used by man since time immemorial, in the treatment of simple ailment like common cold to complex ones like cancer. This can be attributed to high cost of modern health care and side effects of synthetic drugs (Buragohain, 2011). Even today, though tremendous advances have been made in the fields of synthetic organic chemistry, technology and biotechnology, still a large section of the population rely on traditional medicines (Pfoze *et al.*, 2012). Allopathic drugs have brought a revolution throughout the world but the plant based medicines have its own unique status (Sahu *et al.*, 2010). In fact, herbal medicines are entering a revival phase today. The local uses of plants as a cure are common particularly in those areas, which have little or no access to modern health services, such as the innumerable tribal villages (Campbell *et al.*, 1997). World Health Organization (WHO) has shown great interest in documenting the use of medicinal plants from tribes in different parts of the world (Dev, 1997). The ethnic communities of different age groups, different gender and spread over different zones reveal immense variety in application and mode of treatment (Khan and Yadava, 2010). The North-east India is part of both Himalaya as well as Indo-Burma biodiversity hotspots in the world (Mao *et al.*, 2009). It is considered as the 'geographical gateway' for much of India's flora and fauna, and as a consequence the region is one of the richest areas of India in biological values (Shankar and Rawat 2006; Mao *et al.*, 2009). A large number of ethnic people or tribe are also inhabited in this part of India and possesses vast traditional knowledge on effective herbal medicines (Chakraborty *et al.*, 2012).

\*Corresponding author: Rita Nongmaithem,  
Department Ethnobotany and Medicinal Plants Conservation Laboratory,  
Assam University, Silchar-788011.

Manipur, a state of northeast India is known for its ecologically distinctive and rich biodiversity, having many endemic flora and fauna and rich cultural diversity (Yumnam *et al.*, 2012). The state is inhabited by 33 scheduled tribes and all the ethnic communities used a large number of wild and cultivated plants for curing ailments. Thus, a considerable amount of information can be obtained from these groups. The Maring are one of the small tribal groups of Manipur state. Their name is derived from *mei* meaning fire and *ring* meaning to start or produce. Today, the Marings are settled mostly in Chandel District in the South-Eastern part of the present state of Manipur, bordering Myanmar, but also found scattered in places like Senapati, Ukhrul, Churachandpur, Tamenglong, Thoubal, Imphal east and West Districts of Manipur. They still firmly believed in traditional healing and depend on available biodiversity for their various day-to-day needs such as medicine etc. Most of the medical institutions and healthcare centres in Manipur are also concentrated in Imphal and the medical facilities in the remote areas are very limited (Jain *et al.*, 2007). Several works on ethnobotanical studies listing wild edible plants, ethnomedicine and bio-folklore from the state have been reported (Singh *et al.*, 1988; Singh *et al.*, 1989; Mao 1993; Sinha 1996; Majumder and Bharroli, 1997; Mao 1999; Ashalata *et al.*, 2005; Devi *et al.*, 2010; Devi, 2011; Devi *et al.*, 2011), however not such organized documentation studies on Maring tribe of Manipur have been taken up. In view of the above an attempt has been made to document the various plants used by the Maring community in treating different ailments. This knowledge of medicines is age old and is transmitted orally and such there are no written records. Also due to rapid urbanization and modern facilities, younger generation lack interest in such rich indigenous knowledge and are on the verge of extinction. Therefore, the present studies

have been undertaken on a priority basis. Hence, it can also be expected that the information documented on uses of plants may be used as baseline for future studies on phytochemical and pharmacological investigations (Pfoze *et al.*, 2012).

## MATERIALS AND METHODS

The indigenous tribal community or local herbal practitioners (Thim) were interviewed pertaining to uses of plants for curing their ailments, local name etc. with photographic documentation in their habitat. Interviewed were done orally and by taking them to the field. Herbarium of these plant specimens were prepared by following the standard methods (Jain and Rao, 1977). The authentic identification of the plants were done with the help of the available floristic literature such as Flora of British India vol.1-7 (Hooker, 1872 – 1897); Flora of India, vol. 1– 3 (Sharma *et al.*, Edt. 1993); Flora of Assam, vol. 1-4, (Kanjilal *et al.*, 1934 – 1940); and vol. – 5 (Bor, 1940); Flora of India, vol. 12 – 13 (Hajra *et al.*, 1995); (Singh *et al.*, 2004);Floristic diversity of Assam (Bora *et al.*, 2003).

### PLATE-I



A) *Andrographis paniculata* Wall. ex Nees



B) *Blumeopsis flava* (D. Don) Merr



C) *Brynnopsis lociniosa* Naud



D) *Crotalaria juncea* L.



E) *Lindernia ruellioides* (Colsm.)Pennell





F) *Lygodium flexuosum* (L.) Sw.



G) *Oxalis corniculata* L.



H) *Polygonum chinense* L.



I) *Trichosanthes bracteata* (Lam.)Voight

Besides these floras, in order to match the specimens for further confirmation and to identify the plants up to species level, the herbarium sheets were taken to the Botanical Survey of India, Eastern Circle, Shillong for consultation and confirmation of the identification. The voucher specimen will be deposited in the Department of Ecology and Environmental Science, in due course of time.

## RESULTS AND DISCUSSION

A total of 101 plant species belonging to 50 families has been collected from various settlement areas of the Maring community. These collected plants have been used by the community in curing different ailments, since long back. The information on this rich knowledge has been transferred orally from their forefathers. Asteraceae has been found to be the most frequently occurred family with 11 plant species, followed by Cucurbitaceae with 8 species and Verbenaceae with 7 plant species. Since, most of the hospitals are located in town and lacked of reach of medical facilities in remote areas the people depends mainly on local healers for their day-to-day ailments. As such many plants are used in the formulations of medicine by the traditional healers, in combination with other ingredients or wholly and given in the form of decoction, tablets, ointments etc. About 17 plants species are used in curing common cold, headache, sore throat and block nose, indicating that these was the most common ailments among the Maring community. Dysuria (painful urination) was the second most common ailments with 10 plant species used in curing it, followed by burnt wound and cut wound with 9 plant species respectively. Women are considered to be the backbone of the family and as such they are accustomed to daily stress and strain. They face many complicacies in life and therefore are concerned about their health. Many plants are used in curing women's complicacies. Among the documented plants from the Maring community, 7 plant species are used in pregnant related complicacies and dizziness in women. 5 plant species are used in curing leucorrhoea, menstrual disorders and also 5 species are used as blood tonic for women. Sometimes whole plants are used in preparation of medicine while in some case different parts of the plant are used as medicine. The present study also include some list of plant species where the mode of uses were claimed to be new, although it was mentioned in earlier works for different ailments.

Table 1. List of plant species used by the Maring Tribe of Manipur, India

Scientific name	Local name	Parts used	Habit	Uses
<i>Achyranthes aspera</i> L. (Amaranthaceae)	<i>Khujumpere</i>	Leaves	Herb	Leaves extract is prescribed is stomach pain, piles. It is also used in insect bites.
<i>Acorus calamus</i> L. (Araceae)	<i>Dhingwachak</i>	Rhizome	Herb	Rhizome is wear as necklace around baby of 1-2 yrs. where the aroma emitted is use to cure fever.
<i>Acmella paniculata</i> Wall.ex DC (Asteraceae)		Inflorescence	Herb	Inflorescence are just smeared and applied in tooth cavities.
<i>Aegle marmelos</i> (L.) Correa (Rutaceae)	<i>Ansapui</i> <i>Heirikhagok</i>	Fruit	Small tree	Fruit are roasted and taken in stomach pain and indigestion.
<i>Agave americana</i> L. (Agavaceae)	<i>Kewa</i>	Bud	An Arborescent shrub	Bud is used as remedy in cold fever.
<i>Allium hookerii</i> Thw. (Liliaceae)	<i>Kasai-sun</i>	Leaves	Herb	Leaves either raw or cooked are used as remedy in high blood pressure.
<i>Allium odorum</i> (Liliaceae)	<i>Wa-sun</i>	Leaves	Herb	A handful of leaves are either taken raw or boiled in case of dysuria (Painful urination).
<i>Alocasia indica</i> (Roxb.)Schott (Araceae)	<i>Andong</i>	Corm	Herb	Corm are smeared and applied in burnt wound.
<i>Alocasia</i> sps. (Araceae)	<i>Kemlem Khamang</i>	Stem	Herb	Stem are boiled and the red colour decoction is taken as blood tonic and blood purifier.
<i>Aloe barbadensis</i> Mill. (Liliaceae)	<i>Aloe-vera</i>	Leaves	Succulent plant	Soft pulp of the leaves has cooling effects in case of stomach ulcers and as well applied in scalp in dizziness. It is also applied in burnt wound.
<i>Alpinia galanga</i> Willd. (Zingiberaceae)	<i>Kanghoo</i>	Rhizome	Shrub	Fresh rhizome are just eaten or along with chilli paste (ametpa) in sore throat and cough.
<i>Amaranthus spinosus</i> L. (Amaranthaceae)	<i>Chengkruk</i>	Leaves	Herb	Leaves are boiled and eaten as vegetables in constipation.
<i>Ananas comosus</i> L. Merrill (Bromeliaceae)	<i>Keehom</i>	Leaves	Tufted stemless herb	Newly grown leaves are roast in fire and applied in skin infection. The mixture is also diluted in water and taken during fever.
<i>Andrographis paniculata</i> Wall.ex Nees (Acanthaceae)	<i>Phaiboti</i>	Leaves	Herb	Leaves are boiled with sugar candy as effective remedy against mouth ulcer.
<i>Anotis foetida</i> Dalz. (Rubiaceae)	<i>Umbao</i>	Root	Slender herb	The roots are smashed into pulp and applied at boils for early suppuration. It also acts as plaster of Paris for setting and healing fracture bone.
<i>Artemisia nilagirica</i> (C.B.Clarke) Pamp. (Asteraceae)	<i>Kanbor</i>	Leaves	Aromatic undershrub	Leaves are boiled with local hair preparation (Chingi) and applied in head in case of dizziness and exhaustion in pregnant women.
<i>Ardisia colorata</i> Roxb. (Myrsinaceae)	<i>Thingakang</i>	Fruit/Bark/ Leaves	A small tree	The plant parts are either boiled or taken raw in case of dysentery, diarrhoea and sore throat.
<i>Arundo donax</i> L. (Poaceae)	<i>Yendou</i>	Shoot	A glabrous shrub	Young shoot are smeared and the paste applied on forehead of children suffering from fever. Decoction of the shoot is given in worm infection.
<i>Bambusa nutans</i> Wall. ( Poaceae)	<i>Lingkha</i>	Shoot	A tufted Shrub	Crushed young shoot is applied as a remedy in dog and snake bites.
<i>Bauhinia purpurea</i> L.(Caesalpinaceae)	<i>Chingthao- angangba</i>	Flower	A moderate size tree	Paste of the flower is eaten in menstrual disorder and leucorrhoea.
<i>Benincasa hispida</i> (Thunb.)Cogn. (Cucurbitaceae)	<i>Chaganam</i>	Fruit	Slender climbers	Fruit is taken raw or cooked with honey as remedy in food poisoning.
<i>Blumeopsis flava</i> (D.Don) Merr. (Asteraceae)	<i>Pirtiwil</i>	Leaves	Herb	Raw leaves are just smeared and allowed to smell in case of sinuses and also found relief in blocked nose in cold.
<i>Brynopsis lociniosa</i> Naud. (Cucurbitaceae)	<i>Kwakthabi-manbi</i>	Leaves	Climbing herb	Dried leaves are burnt and the smoke is allowed to inhaled in asthma.
<i>Cajanus cajan</i> L. Millsp. (Fabaceae)	<i>Rungmabey</i>	Leaves and root	Erect shrubs	The mature leaves (red in colour) or roots are boiled with water and taken as a remedy in initial stage in cancer.
<i>Carica papaya</i> L. (Caricaceae)	<i>Awamachang</i>	Root	Small tree	Roots are boiled with sugar candy and taken in leucorrhoea.
<i>Cissus adnata</i> Roxb. (Vitaceae)	<i>Shampor</i>	Leaves	A tall Climbers	Leaves are boiled and eaten as food for calculus and dysuria (painful urination).
<i>Clerodendrum colebrookianum</i> Walp. (Verbenaceae)	<i>Khuingbu</i>	Leaves	Shrubs	Boiled decoction of leaves are taken as remedy in high pressure.
<i>Clerodendrumindicum</i> L. (Verbenaceae)	<i>Charoi-utong</i>	Leaves or root	A small shrub	Leaves or root are boiled and drink as a remedy in dysuria (difficult or painful urination).
<i>Clerodendrum serratum</i> Spreng (Verbenaceae)	<i>Ankha</i>	Leaves	Undershrub	Leaves are either eaten in raw form or cooked as blood purifier or tonic.
<i>Codonacanthus pauciflora</i> Nees. (Acanthaceae)	<i>Nongpok langthrei</i>	Leaves	Erect herb	Leaves are boiled with some bark of <i>Erythrina indica</i> and allowed to bath in bodyache, back-pain.
<i>Coir lacryma-jobi</i> L. (Poaceae)	<i>Mumsil</i>	Leaves and Roots	Tall herb	Roots or leaves are boiled with sugar candy and taken as a remedy in stone case.
<i>Costus speciosus</i> (Koenig)Sm. (Zingiberaceae)	<i>Wainamthru</i>	Leaves	Robust herb	Leaves are either boiled or taken raw during fever. It is also used as ointments in knife cut wound.
<i>Crasscephalum crepidioides</i> (Benth Moore) (Asteraceae)	<i>Louranba</i>	Leaves	Succulent herb	Leaves are crushed and made to drink during stomach ulcers.
<i>Crotolaria juncea</i> L. (Fabaceae)	<i>Yunpoksangrong</i>	Leaves	Tall undershrub	Leaves are eaten raw or cooked as blood tonic and blood purifier.

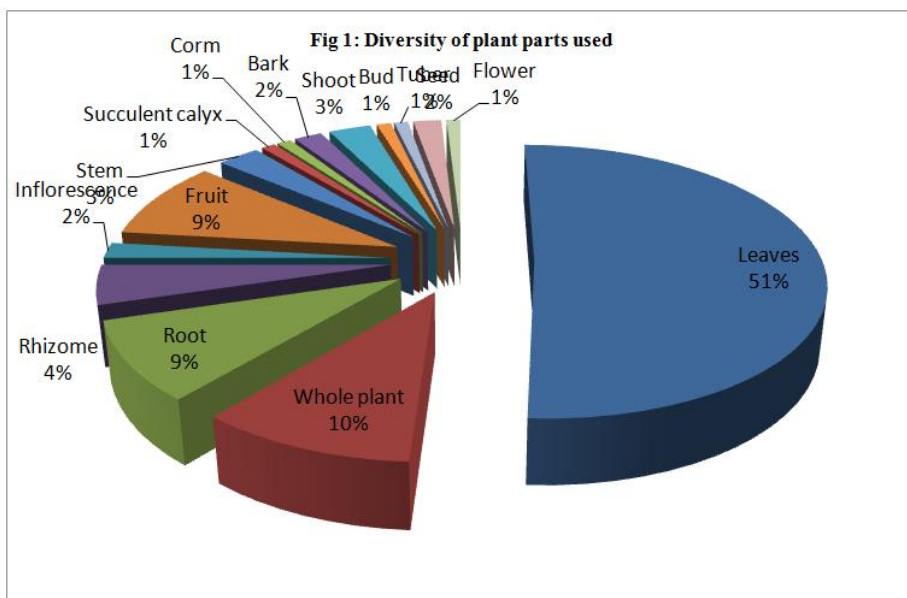
<i>Cucurma amada</i> Roxb. (Zingiberaceae)	<i>Heinouman</i>	Rhizome	Herb	Rhizome made into paste and mixed with seeds of <i>Rhus succedanea</i> is taken in diabetes.
<i>Curcuma caesia</i> Roxb. (Zingiberaceae)	<i>Itungsanmong</i>	Rhizome	Herb	Fresh or dry rhizomes are used to cure Indigestion and Gastrodynia (stomach ache).
<i>Cynodon dactylon</i> Pers. (Poaceae)	<i>Phaibhung</i>	Root	A perennial herb	Root (rung) of this plant is crushed and drink with honey as remedy for fever.
<i>Datura metal</i> L. (Solanaceae)	<i>Sagol hidak</i>	Leaves	Undershrub	Crushed leaves are applied at boils for early suppuration. It is also given as a remedy in snake bite.
<i>Daucus carota</i> L. (Apiaceae)	<i>Gajar</i>	Root/Seed	Herb	Root either cooked or raw is eaten for good eye sights. Seed when boiled with water and red sugar is given as remedy for irregular menstrual.
<i>Dioscorea alata</i> L. (Dioscoriaceae)	<i>Ra-ga-sang</i>	Tuber	Large climbers	Tuber are mixed with other four ingredients ( <i>Saccharum officinale</i> , <i>Centella asiatica</i> , <i>Cucurma aromatic</i> and Jeera). This mixture is a good remedy in jaundice, stomach related problem and appendicitis.
<i>Drymaria cordata</i> Willd. (Caryophyllaceae)	<i>Tandan mana</i>	Whole plant	A glabrous diffuse herb	Whole plant is boiled and taken as remedy for night blindness. A handful of the plant when warmed in fire and the smoke is allowed to inhaled in asthma.
<i>Duranta repens</i> L. (Verbenaceae)	<i>Sambanlei</i>	Leaves	Evergreen spiny shrub	The leaves are smeared into paste and applied as a remedy in dermal outgrowth or tumour.
<i>Eclipta prostrata</i> L. (Asteraceae)	<i>Uchi sumban</i>	Leaves	Herb	Fresh leaves are crushed and mix with honey as a remedy for typhoid and fever.
<i>Elsholtzia blanda</i> Benth. (Lamiaceae)	<i>Maleng</i>	Leaves/ Inflorescence	Shrub	Leaves or inflorescence are used in tonsillitis.
<i>Elsholtzia communis</i> Coll. & Hemsl. (Lamiaceae)	<i>Anreiyin</i>	Whole plant	Herb	Whole plant is boiled and given in tonsillitis.
<i>Enhydra fluctuans</i> Lour. (Asteraceae)	<i>Komprek-tujombi</i>	Shoot	Glabrous herb	Fresh shoots are eaten either in raw form or boiled with sugar candy in diabetes. Also eaten in leucorrhoea.
<i>Equisetum ramosissimum</i> Desf. ssp. <i>debile</i> Roxb. (Equisetaceae)	<i>Lai-utong</i>	Whole plant	Rhizomatous herb	A handful of the plant is warm in fire and smoke is allowed to breathe in to cure Epistaxis (Nose bleeding).
<i>Eryngium foetidum</i> L. (Apiaceae)	<i>Awa-phadigom</i>	Whole plant	Aromatic herb	Plant either raw or decoction is given in high blood pressure. Leaves when smeared and allowed to inhaled, finds relieved in person suffering from sudden stroke.
<i>Eupatorium adenophorum</i> Spreng. (Asteraceae)	<i>Kambirei</i>	Leaves	Suffrutescent herb	The leaf paste is used for healing knife cuts and wound.
<i>Eupatorium birmanicum</i> DC. (Asteraceae)	<i>Langthrei</i>	Leaves	Herb	Leaves decoction is given in stomach ulcers as well as in mouth ulcers.
<i>Eupatorium odoratum</i> L. (Asteraceae)	<i>Nangkhang</i>	Leaves	Straggling shrubs	Leaves paste are antiseptic and applied in cut wound.
<i>Fragaria nillgerensis</i> Schlecht.ex J.Gay (Rosaceae)	<i>Nungaibi</i>	Leaves	Herbs	Leaves are boiled with sugar candy and taken as remedy in calculus.
<i>Garcinia pedunculata</i> Roxb. ex Buch. (Guttiferae)	<i>Heibung</i>	Fruit	Tree	Fruits are boiled in water and given as remedy in sore throat and cough.
<i>Glochidion coccinum</i> Forst (Euphorbiaceae)	<i>Ningthourembi</i>	Leaves	A shrub	Leaves are smeared and applied at wounded part to avoid blood clotting.
<i>Gmelina arborea</i> Roxb. (Verbenaceae)	<i>Marhong</i>	Leaves	A middle sized tree	Leaves are made into paste and applied as remedy in snake-bite.
<i>Hibiscus sabdariffa</i> L. (Malvaceae)	<i>Sougri-kasan</i>	Leaves/ Succulent calyx	Erect undershrubs	Leaves are used as ingredients in local hair preparation (chingi) and applied in dizziness. Succulent calyx is boiled and taken as tonic for blood purifier.
<i>Lagenaria leucantha</i> Rusby (Cucurbitaceae)	<i>Umthlum</i>	Leaves	Climbing herb	Leaves are smeared and applied in bee sting.
<i>Lantana camara</i> L. (Verbenaceae)	<i>Namthibi</i>	Leaves	Straggling shrub	Leaves are smeared into paste and applied in ringworm. Also used in cut wound to stop bleeding.
<i>Lindernia ruellioides</i> (Colsm.) Pennel (Linderniaceae)	<i>Tangkhetlou</i>	Whole plant	An annual herb	Whole plant is boiled with sugar candy and taken as remedy in calculus.
<i>Litsea monopetalata</i> (Roxb.) Pers. (Lauraceae)	<i>Yailey</i>	Root	Middle-sized tree	Sticky paste of the root when mixed with animal oils (preferably pig) is applied as good remedy for back pain.
<i>Luffa cylindrica</i> L. (Cucurbitaceae)	<i>Sebot</i>	Leaf	A large climbers	Crushed leaf is used as bandage in burnt wound.
<i>Lygodium flexuosum</i> (L.) Sw. (Lygodiaceae)	<i>Laichangkrang</i>	Whole plant	Climbing fern	Whole plant is boiled with <i>Panicum humidorum</i> (Kangmapan) and allowed to drink in jaundice. This boiled decoction is also used to bath persons suffering from jaundice.
<i>Lysimachia parviflora</i> Baker. (Polygonaceae)	<i>Kengoi (M)</i>	Whole plant	Herb	Whole plant is cooked and taken as remedy for piles.
<i>Melastoma malabathricum</i> L. (Melastomaceae)	<i>Yachubi</i>	Root/Fruit	Bushy shrubs	Roots are cut into seven pieces and boiled with sugar candy. This is given as remedy in leucorrhoea. Fruit are smeared into paste and used to blacken their teeth (distinctive peculiarities of Maring community) to strengthens the teeth and protect from gum diseases and cavities.
<i>Meyna laxiflora</i> Robyns (Rubiaceae)	<i>Heipi</i>	Seed	Large shrub	Seed are crushed and applied in head in children with worm infection.
<i>Mikania cordata</i> (Burm.) B.L.Robinson (Asteraceae)	<i>Nongkamlou</i>	Leaves	Aggressive climbers	Leaves either boiled or raw are taken during fever and as ointments in knife cut wound.
<i>Mimosa pudica</i> L. (Mimosaceae)	<i>Lam-ekaiithabi</i>	Roots	A straggling prickly undershrub	Roots are boiled with sugar candy and taken as remedy in dysentery.
<i>Momordica charantia</i> L. (Cucurbitaceae)	<i>Samkha</i>	Leaves	Climbers	Boiled leaves are given as remedy in fever.

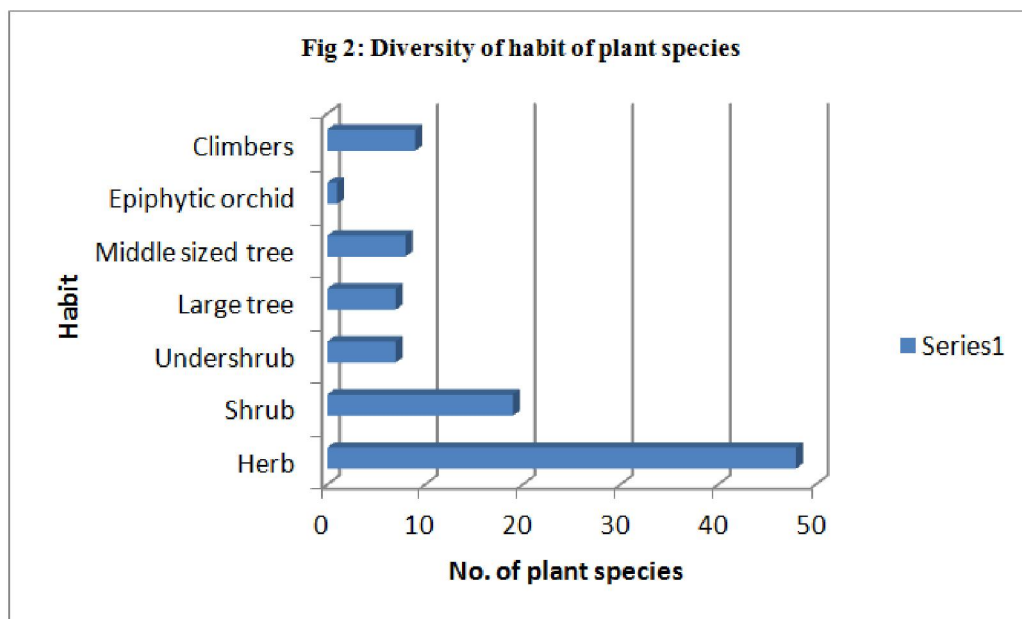
<i>Musa paradisiaca</i> L. (Musaceae)	<i>Laphoi akhabi</i>	Root	Stoliniferous herbs	Roots are boiled with red sugar and given as remedy during pregnancy complicacies in women.
<i>Neptunia oleraceae</i> Lour. (Mimosaceae)	<i>Ishing-ikaithabi</i>	Whole plant	Aquatic herb	Juice of the stem is used in earache.
<i>Ocimum sanctum</i> L. (Lamiaceae)	<i>Tulsi</i>	Leaves	Herb	Leaves are boiled and taken as remedy for asthma. Leaves paste are also applied in skin problems.
<i>Oroxylum indicum</i> Vent. (Bignoniaceae)	<i>Aagteklum</i>	Fruit and Bud	A middle sized tree	Unripe fruit of these plant are wonder. They are roast in fire and eaten as a remedy in tuberculosis and cancer. Buds of these plant are also effective.
<i>Oxalis corniculata</i> L. (Oxalidaceae)	<i>Kimchi</i>	Whole plant	Diffuse herb	A handful of the plant are boiled as ingredient in local hair preparation (chingi) and applied as remedy in dizziness. Plant when boiled with little salt is a good remedy in gastric problem and also in jaundice.
<i>Paederia foetida</i> L. (Rubiaceae)	<i>Oiunumrui</i>	Leaves	A twining herb	Leaves are boiled with water and taken as remedy in high blood pressure and tuberculosis.
<i>Passiflora edulis</i> Sims (Passifloraceae)	<i>Sitaphal</i>	Leaves	Glabrous climbers	Leaves are either taken raw or boiled in diabetes.
<i>Phaseolus lunatus</i> L. (Fabaceae)	<i>Belairik</i>	Leaves	Herb	Leaves are crushed with mustard oil or kerosene and applied at forehead or behind earlobe during fever.
<i>Phlogacanthus thyrsoformis</i> Roxb ex Hardw.) Mabb. (Acanthaceae)	<i>Sirim</i>	Leaves	Evergreen shrub	Leaves are boiled and made to drink as remedy during fever and in smallpox.
<i>Pholidota articulata</i> Lindley (Orchidaceae)	<i>Rootut</i>	Stem		Crushed stem is applied as antiseptic in cut wound.
<i>Phyllanthus niruri</i> L. (Anacardaceae)	<i>Chakpaheigru</i>	Whole plant	Herb	Boiled plant decoction are given as remedy in diabetes. Fresh plant are smeared and applied in skin infection.
<i>Pinus khasya</i> Royle (Pinaceae)	<i>Meikhyla</i>	Stem	Tree	Resin from the stem is applied in ringworm. A piece of the stem boiled with rice-washed water (chingi) is a good remedy in case of dizziness in pregnant women.
<i>Polygonum chinense</i> L. (Polygonaceae)	<i>Chimshi</i>	Leaves	Herb	Leaves are boiled with sugar candy and taken in calculus.
<i>Polygonum plebeium</i> R.Br. var. <i>plebeium</i> R.Br. (Apocynaceae)	<i>Phurlou</i>	Leaves	Herb	Leaves are boiled and allowed to drink in dysuria (painful urination).
<i>Portulaca oleracea</i> L. (Portulacaceae)	<i>Leibak-kundo</i>	Whole plant	Prostrate creeping herb	Boiled plant is applied in forehead in case of dizziness.
<i>Persicaria posumba</i> (Polygonaceae)	<i>Phakpai</i>	Leaves	Herb	Leaves are eaten both in raw form or cooked in high blood pressure and as cure for piles.
<i>Ricinus communis</i> L. (Euphorbiaceae)	<i>Nasa</i>	Leaves	Shrub	Leaves paste are applied in cut wound.
<i>Sapindus trifoliatus</i> L. (Sapindaceae).	<i>Lingchi</i>	Fruit	A middle size tree	The fruit is smeared with water where it gives froth. The froth is soaked in cotton and applied at forehead in children as a remedy in intestinal worm.
<i>Schima wallichii</i> (D.C.) Korth. (Theaceae)	<i>Thingphunchow</i>	Leaves	A large evergreen tree	2 to 3 leaves are boiled in about three litres of water until it turns into red colour. This is allowed to drink in case of stone case and dysuria (painful urination).
<i>Scoparia dulcis</i> L. (Scrophulariaceae)	<i>Antrothrirou</i>	Leaves	A branching herb	Leaves are crushed and mix with honey and drink as a remedy in epistaxis.
<i>Scutellaria discolor</i> Colebr. (Lamaiceae)	<i>Tangkha</i>	Leaves	Herb	Leaves is boiled and taken in piles.
<i>Solanum anguivi</i> Lam. (Solanaceae)	<i>Leipungkhangga</i>	Fruit	A coarse undershrub	Decoction of the fruit is used as remedy for cough and cold.
<i>Solanum torvum</i> Swartz. (Solanaceae)	<i>Namtal</i>	Fruit	A shrub	The dried fruit is warm in fire and smoke is allowed inside the mouth in case of tooth cavities.
<i>Tamarindus indica</i> L. (Caesalpinaceae)	<i>Mangge</i>	Seed	Large tree	Crushed seed are applied in areas of snake bites and dog bites.
<i>Tectona grandis</i> L. (Verbenaceae)	<i>Chingjaku</i>	Leaves	A large deciduous tree	Boiled decoctions of young leaves are given as tonic for blood in women.
<i>Terminalia arjuna</i> Roxb. (Combretaceae)	<i>Maiyokpha</i>	Bark	Tree	Bark is boiled and given in dysentery.
<i>Toona ciliata</i> M.Roem. (Meliaceae)	<i>Kantei</i>	Leaves	Evergreen trees	Crushed leaves are given as a remedy in headache.
<i>Trichosanthes bracteata</i> (Lam.)Voigt (Cucurbitaceae)	<i>Umkha</i>	Fruit	Extensive climbers	Fresh or dried fruit are smeared and applied in dermal tumour.
<i>Xanthium strumarium</i> L. (Compositae)	<i>Hamengsampakpi</i>	Leaves	A coarse herb	Leaves of the plants are boiled with a bark of <i>Oroxylum indicum</i> , <i>Drymaria quercifolia</i> , leaves of <i>Schefflera elata</i> bark of <i>Mangifera indica</i> L. and leaves of <i>Artemisia parviflora</i> and the smoke is allowed to heat the body in dermal outgrowth or cysts until sweat appears. This process is repeated for 2-3 times in a day.
<i>Zanthoxylum acanthopodium</i> DC. (Rutaceae)	<i>Singdina</i>	Leaves	A straggling throny shrub	Leaves of <i>Singdina</i> are mixed with roots of <i>Coriandrum sativum</i> to form paste and applied for early suppuration of boils.
<i>Zehneria scabra</i> (L.f.)Sonder (Cucurbitaceae)	<i>Samthathe</i>	Leaves	Herbs	Leaves or twiners are boiled with some (new shoots of) <i>Imperata cylindrica</i> (L.)P.Beauv. in about 1 litre of water. When the water has evaporated to about half the level, it is cooled down and taken as a remedy in jaundice.
<i>Zingiber montanum</i> Link. Ex A. Dietr. (Zingiberaceae)	<i>Phaiwai</i>	Rhizome	A rhizomatous herb	Rhizomes of the plant is crushed and mixed with peruk ( <i>Centella asiatica</i> ) and Yenakhat ( <i>Scutellaria discolor</i> ) and given as a remedy for curing piles.



**Table 2. List of new mode of uses of some plant species by the Maring community of Manipur**

Associated disease category	Name of the species	Traditional mode of uses
Burnt wound	<i>Alocasia indica</i> (Roxb.) Schott	Corm are smeared and applied in burnt wound.
	<i>Luffa cylindrica</i> L.	Crushed leaf is used as bandage in burnt wound.
Blood tonic, blood purifier	<i>Alocasia</i> sps.	Stem are boiled and the red colour decoction is taken as blood tonic and blood purifier.
Food poisoning	<i>Benincasa hispida</i> (Thunb.) Cogn.	Fruit is taken raw or cooked with honey as remedy in food poisoning.
Cancer	<i>Cajanus cajan</i> L. Millsp.	The mature leaves (red in colour) or roots are boiled with water and taken as a remedy in initial stage in cancer.
Leucorrhoea	<i>Carica papaya</i> L.	Roots are boiled with sugar candy and taken in leucorrhoea.
	<i>Enhydra fluctuans</i> Lour.	Fresh shoots are eaten as remedy in leucorrhoea.
Dysuria (painful urination)	<i>Clerodendrum indicum</i> L.	Leaf or root is boiled and drink as a remedy in dysuria (difficult or painful urination).
	<i>Schima wallichii</i> (D.C.) Korth.	2 to 3 leaves are boiled in about three litres of water until it turns into red colour. This is allowed to drink in case of stone case and dusuria (painful urination).
Bodyache	<i>Codonacanthus pauciflora</i> Nees.	Leaves are boiled with some bark of <i>Erythrina indica</i> and allowed to bath in bodyache, backpain.
Fever	<i>Cynodon dactylon</i> Pers.	Root (rung) of this plant is crushed and drink with honey as remedy for fever.
	<i>Phaseolus lunatus</i> L.	Leaf is crushed with mustard oil or kerosene and applied at forehead or behind earlobe during fever.
Night Blindness	<i>Drymaria cordata</i> Willd.	Whole plant is boiled and taken as remedy for night blindness.
Dermal outgrowth or tumour	<i>Duranta repens</i> L.	The leaves are smeared into paste and applied as a remedy in dermal outgrowth or tumour.
	<i>Xanthium strumarium</i> L.	Leaves of the plants are boiled with a bark of <i>Oroxylum indicum</i> , <i>Drymaria quercifolia</i> , leaves of <i>Schefflera elata</i> bark of <i>Mangifera indica</i> L. and leaves of <i>Artemisia parviflora</i> and the smoke is allowed to heat the body in dermal outgrowth or cysts until sweat appears. This process is repeated for 2-3 times in a day.
Sudden stroke	<i>Eryngium foetidum</i> L.	Leaves when smeared and allowed to inhaled, finds relief in person suffering from stroke.
Sudden stroke	<i>Eryngium foetidum</i> L.	Leaves when smeared and allowed to inhaled, finds relief in person suffering from stroke.
Cut wound	<i>Eupatorium odoratum</i> L.	Leaves paste are antiseptic and applied in cut wound.
	<i>Mikania cordata</i> (Burm.) B.L. Robinson	Leaves smeared into paste and applied in cut wound.
Dizziness	<i>Hibiscus sabdariffa</i> L.	Leaves are used as ingredients in local hair preparation (chingi) and applied in dizziness in pregnant women.
Jaundice	<i>Lygodium flexuosum</i> (L.) Sw.	Whole plant is boiled with <i>Panicum humidorum</i> (Kangmapan) and allowed to drink in jaundice. This boiled decoction is also used to bath persons suffering from jaundice.
Worm infection	<i>Meyna laxiflora</i> Robyns	Seed are crushed and applied in head in children with worm infection.
Dysentery	<i>Mimosa pudica</i> L.	Roots are boiled with sugar candy and taken as remedy in dysentery.
Pregnancy complicacies in women	<i>Musa paradisiaca</i> L.	Roots are boiled with red sugar and given as remedy during pregnancy complicacies in women.
Asthma	<i>Ocimum sanctum</i> L.	Boiled leaves are taken as remedy for asthma.
Diabetes	<i>Passiflora edulis</i> Sims	Leaves are either taken raw or boiled in diabetes.
Calculus	<i>Polygonum chinense</i> L.	Leaves are boiled with sugar candy and taken in calculus.
Epistaxis (Nose bleeding)	<i>Scoparia dulcis</i> L.	Crushed leaves are mixed with honey and taken as a remedy in epistaxis (Nose bleeding).
Dog bites/Snake bites	<i>Tamarindus indica</i> L.	Seed is crushed and applied in areas of snake bites and dog bites.





## Conclusion

Tribal indigenous knowledge is on the decline nowadays, due to the advent of modern technologies and lack of interest by the younger generations. Such investigations need to be conserved and prioritize as there are no written records and is passed on from their forefathers through orally. Further exploration works of such knowledge will be helpful in developing novel drugs through detail clinical study.

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