

# Dermatologically relevant biomedicinal plants in Manipur, India

Bishurul Hafi<sup>1</sup>, Nandakishore Singh<sup>2</sup>, Bimola Devi<sup>3</sup>, Khumukcham Nongalleima<sup>4</sup>, Sanalembi Mutum<sup>2</sup>, Romita Bachaspatimayum<sup>2</sup>

<sup>1</sup>Department of Dermatology, Venereology and Leprology, IQRAA International Hospital and Research Institute, Kozhikkod, Kerala, India, <sup>2</sup>Department of Dermatology, Venereology and Leprology, Regional Institute of Medical Sciences, Imphal, Manipur, India, <sup>3</sup>Department of Chemistry, Imphal college, Manipur, India, <sup>4</sup>Department of Biotechnolog, Institute of Bioresource and Sustainable Development, Imphal, India

**Corresponding author:** Dr. Bishurul Hafi, E-mail: bishuru@gmail.com

## ABSTRACT

**Background:** Manipur is a border state of north-eastern India and is a part of Indo-Myanmar biodiversity hot spot. The current study was done to assess the different flora commonly used by the locals for the dermatological issues. **Methodology:** All the available articles published between 2013 December to 2016 June were searched in 2 search engines (Pubmed and Google scholar) as well as 4 scientific journals (Indian Journal of Traditional Knowledge, Journal of ethnopharmacology, Journal of Economic and Taxonomic Botany and Indian Journal of natural products) with keywords biomedicinal plants, Manipur and skin disorders. A total of 459 articles were analysed and only 19 articles were found relevant to the subject. All the plant and plant products traditionally used for skin infections were tabulated. It was cross checked by research scholars in Institute of Bio resource and Human Development, Imphal. Further, their usage was confirmed with local traditional healers. **Results:** 31 plants were seen used as antifungal agents, 21 antibacterial agents, 16 anti scabitic agents, 6 anti pruritic medicines, 4 plants used to treat leukoderma, 7 anti acne agents, 4 products to use in eczema, 5 anti leprotic agents, 17 plant products to enhance wound healing with 6 plants specialised for burn wounds, 5 anti gonorrhoeal plants, 3 plants used in oral ulcers and 12 hair supplements. But none of the plants were studied scientifically. **Conclusion:** True clinical trials as well as scientific laboratory based examinations to decipher the contents of the herbs were not carried out effectively yet.

**Key words:** Medicinal plants; Traditional medicine; Northeast

## INTRODUCTION

Manipur is a border state of north-eastern India situated between 23.83°N and 25.68°N latitude and 93.03°E and 94.78°E longitude. It shares border with Myanmar and is a part of Indo-Myanmar biodiversity hot spot. It comprises 1820 sq.km of flat valley surrounded by 20507sq.km of hill territory and forms a part of the Himalayan mountain system. Meitei (Manipuri) are the majority community who along with Meitei pangal (Manipuri Muslim) inhabit the valley region whereas the hilly areas are inhabited by 30 different tribes. Manipur is known for its ecologically distinctive and rich biodiversity, having forest in 60% of its total land.

More importantly most of the traditional knowledge are still preserved and actively used in daily life for healing in natural ways. The current study was done to assess the different flora commonly used by locals for the dermatological problems.

## METHODOLOGY

All the available articles published between 2013 December to 2016 June were searched in two search engines (Pubmed and Google scholar) as well as four scientific journals (Indian Journal of Traditional Knowledge, Journal of Ethnopharmacology, Journal of Economic and Taxonomic Botany and Indian Journal

**How to cite this article:** Hafi B, Singh N, Devi B, Nongalleima K, Mutum S, Bachaspatimayum R. Dermatologically relevant biomedicinal plants in Manipur, India. *Our Dermatol Online*. 2020;11(e):e103.1-e103.6.

**Submission:** 29.11.2019; **Acceptance:** 10.01.2020

**DOI:** 10.7241/ourd.2020e.103

of natural products) with keywords biomedical plants, Manipur and skin disorders. A total of 459 articles were analysed and only 19 articles were found relevant to the subject. All the plant and plant products traditionally used for different dermatological conditions were tabulated. It was cross checked by research scholars in the Institute of Bioresources and Human Development, Imphal. Further, their usage was confirmed with local traditional healers (maibas and maibis) by open end interview technique.

## RESULTS

We could find out 31 plants used as antifungal agents, 21 antibacterial agents, 16 anti scabitic agents, 5 anti leprotic agents, 5 anti gonorrhoeal plants (Table 1), 6 anti pruritic medicines (Table 2), 4 plants used to treat leukoderma (Table 3), 7 anti acne agents (Table 4), 4 products to use in eczema, 1 antipsoriatic agent (Table 5), 17 plant products to enhance wound healing with 6 plants specialised for burn wounds, 3 plants used in oral ulcers (Table 6), 1 as emollient, 12 hair supplements and 35 plants extracts used to prepare natural herbal shampoo (Table 7).

## DISCUSSION

65-80% of world's population use complementary and alternative medicines (CAM) as treatment modality. Prevalence is higher among developing countries and rising in developed ones [1]. These medicinal systems are heavily dependent on various plant species and plant based products. Some species are endemic and are becoming increasingly rare and at the verge of extinction. Hundreds of plant products were in use from time immemorial to treat dermatological conditions (Figs. 1 - 2).

In a detailed study among Lois tribes Andro village, 42 plant species were found to be actively used for skin disorders. The 42 plant species belonged to 39 genera which are distributed over 22 families. Plant parts used and mode of usage has been described in detail [1].

Inaocha et al has tabulated the collective list of wild biomedical plants used in tribes of the hills of Manipur. The investigation reported 100 species of 41 families with 63 aromatic and 37 non-aromatic plants. They traced five critically endangered plants, still growing wild and over exploited for medicinal and commercial purposes [4].



**Figure 1:** Scientific name- *Tegeteserecta* (Asteraceae), Vernacular name- Sanareiathonba, leaves are used in herbal shampoo preparation.



**Figure 2:** Scientific name- *Allium odorum* (Liliaceae), vernacular name- Maroinakupi, whole plant is used as antibacterial agent.

Another study by Leishangthem et al described medicinal values of 50 plants commonly seen in Imphal East district. Out of it nine are widely used for dermatological conditions. It was a questionnaire based study conducted in different remote villages [5].

Study by Rita N et al explained an ancient cosmetic and strengthening method of tooth among Maring tribes. They used fruit of *Garcinia pedunculata*, locally known as Heirou, was cut into thin slices and roasted in fire. Some small reddish black coloured fruit of *Melastomamalabathricum*, locally known as Yachubi was also roasted. Both the roasted fruit are taken orally and kept inside the mouth avoiding swallowing of the same and at the same time the teeth are exposed to the heat of burning charcoal. This process of exposure to heat is allowed for few minutes until the teeth turns into blackish colour [6].

**Table 1:** Plants used in infections [1-10]

Scientific name (Family)	Vernacular name	Parts used
Antifungal		
Juglans regia (Juglandaceae)	Heijuga/Heijugak	Leaves
Lithocarpus elegans (Fagaceae)	Kuhi	Stem bark
Alpinia galangal (Zingiberaceae)	Kanghoo	Rhizome
Nicotiana plumbaginifolia (Solanaceae)	Meitei hidak mana	Leaves
Capsicum annum (Solanaceae)	Meitei Morok	Leaves
Drymariacordata (Caryophyllaceae)	Tandanpambi	Whole plant
Ipomoea aquatica (Convolvulaceae)	Kolamni	Whole plant
Bombax ceiba	Tera	-
Cassia fistula	Chahui	-
Acacia catechu (Fabaceae or Leguminosaceae)	Katha	Seed, tender, pod
Curcuma angustifolia (Zingiberaceae)	Yaipal	Inflorescence
Mikania scandens (Asteraceae)	Uri hingchabi	Whole plant
Lantana lamara (Verbenaceae)	Nongbaslei	Leaves, fruit
Plectranthus ternifolius (Lamiaceae)	Khoiju	Leaves
Toona ciliata (Maliaceae)	Tairel	Leaves
Vitex trifolia (Verbenaceae)	Urik-shibi	Leaves
Calotropis gigantean (Asclepiadaceae)	Ang-got	Shoot
Pistia stratiotes	Kangjao	Whole plant
Ocimum sanctum (Lamiaceae)	Lurimi	Leaves
Alpinia galanga (Zingiberaceae)	Aital	Rhizome
Pandanus odoratissimus (Pandanaaceae)	Gamlengthei	Flower
Rumex maritimus (Polygonaceae)	Torongkhongchak	Leaves
Brassica juncea (Brassicaceae)	Hangam	-
Brassica rapa (Brassicaceae)	Salgam	-
Croton tiglium (Euphorbiaceae)	Koni-bih	-
Helianthus annuus (Asteraceae)	Numitlei	-
Madhuca longifolia (Sapotaceae)	Nageshor	-
Olea europaea (Oleaceae)	Chorfon	-
Ricinus communis (Euphorbiaceae)	Kege	-
Capsella bursa-pastoris (Brassicaceae)	Chantruk	-
Antibacterial		
Jatropha curcas (Euphorbiaceae)	Awa kege	Latex, seed
Bauhinia acuminata (Leguminosae)	Chingthraoangonba	Stem bark
Bombax ceiba (Malvaceae)	Tera	-
Cassia fistula (Fabaceae)	Chahui	-
Oroxylum indicum (Bignoniaceae)	Shamba	-
Catharanthus roseus (Apocynaceae)	Saheb lei	-
Drymariacordata (Caryophyllaceae)	Tandanpambi	-
Zingiber officinale (Zingiberaceae)	Lam-shing	Rhizome

(Contd...)

**Table 1:** (Continued)

Scientific name (Family)	Vernacular name	Parts used
Dryopteris marginata (Polypodiaceae)	Lai-chanchrang	Leaves
Curcuma angustifolia (Zingiberaceae)	Yaipal	Inflorescence
Xylostrongylifolia (Flacourtiaceae)	Nong-leishang	Leaves, fruit
Pinus kesiya (Pinaceae)	Uchan	Wood, leaves
Toona ciliata (Meliaceae)	Tairel	Leaves
Allium ascalonium (Liliaceae)	Tilhou-macha	Leaves, bark
Elythria ciliata (Lamiaceae)	Tekta	Leaves
Allium odorum (Liliaceae)	Maroinakupi	Whole plant
Allium hookeri (Alliaceae)	Maroinapakpi	Whole plant
Argyrea nervosa (Convolvulaceae)	Poongdinglee	Leaves
Phologanthus thyriiformis (Acanthaceae)	Nongmangkha	Shoot, rhizome
Juglans regia (Juglandaceae)	Heijugak	
Anesomites indica (Lamiaceae)	Thoidingangouba	
Anti-scabitic		
Jatropha curcas (Euphorbiaceae)	Awa kege	Latex, seed
Lithocarpus elegans (Fagaceae)	Kuhi	Stem bark
Arundo donax (Poaceae)	Yengthou	Tender shoots
Mimosa pudica (Mimosaceae)	Kangaphalekaithabi	Whole plant
Azadirachtaindica (Meliaceae)	Nim	Leaves
Bauhinia acuminata (Leguminosae)	Chingthraoangouba	Stem bark
Capparis tenera (Capparaceae)	Kakyelkhujin	Leaves
Curcuma longa (Zingiberaceae)	Yaingang	Rhizome
Drymariacordata (Caryophyllaceae)	Tandanpambi	Whole plant
Buddleja asiatica (Buddlejaceae)	Ngamurei	-
Gossypium arboreum (Malvaceae)	Chaning	Flower
Manihot esculenta (Euphorbiaceae)	U-mangra	Leaves
Nerium indicum (Apocynaceae)	Kabireiangangba	Leaves
Tagetes patula (Asteraceae)	Hao-sanarei	Leaves
Toona ciliata (Meliaceae)	Tairen	Leaves
Vitex trifolia (Lamiaceae)	Urikshibi	Whole plant
Anti-leprosy		
Azadirachtaindica (Meliaceae)	Nim	Leaves
Calotropis gigantean (Asclepiadaceae)	Ang-got	Shoot
Jatropha gossypifolia (Euphorbiaceae)	E-hidak	Leaves, shoot
Zingiber zerumbet (Zingiberaceae)	Singkha	Rhizome
Dioscorea alata (Dioscoreaceae)	Hakaisan	Tuber
For Gonorrhoea		
Phyllanthus acidus (Phyllanthaceae)	Gihori	-
Equisetum debile (Equisetaceae)	Lai-utong	Leaves
Houttuynia cordata (Sauraceae)	Toningkhok	Leaves, rhizome
Magnolia champaca (Magnoliaceae)	Leihao	Inflorescence, root
Portulaca oleraceae	Leipakkundo	Shoot

**Table 2:** Plants used for pruritus [1,3,4,6]

Scientific name (Family)	Vernacular name	Parts used
<i>Bauhinia acuminata</i> (Leguminosae)	Chingthraoangonba	Stem bark
<i>Capparis tenera</i> (Capparaceae)	Kakyelkhujin	Leaves
<i>Chenopodium Albans</i> (Amaranthaceae)	Monsaobi	-
<i>Acorus calamus</i> (Acaceae)	Oak-hidak	Leaves, root, rhizome
<i>Sagattariasagittifolia</i> (Alismataceae)	Koukha	Leaves
<i>Curcuma amada</i> (Zingiberaceae)	Yaiheinouman	Whole plant

**Table 3:** Plants used for leukoderma [3,7,10]

Scientific name (Family)	Vernacular name	Parts used
<i>Calotropis gigantea</i> (Apocynaceae)	Angkot	Latex
<i>Mussaendra glabra</i> (Rubiaceae)	Hanurei	Roots
<i>Alpinia galanga</i> (Zingiberaceae)	Kaang hu	rhizome
<i>Cassia fistula</i> (Fabaceae)	Chahui	-

**Table 4:** Plants used for acnie [1,2,7,10]

Scientific name (Family)	Vernacular name	Parts used
<i>Mimosa pudica</i> (Mimosaceae)	Kangphalekaithabi	Whole plant
<i>Ipomoea aquatica</i> (Convolvulaceae)	Kolamni	Whole plant
<i>Bombex ceiba</i> (Bombacaceae)	Tera	-
<i>Caprica papaya</i> (Caricaceae)	Awathabi	-
<i>Lagenariasicereria</i> (Cucurbitaceae)	Khongdrum	Fruit
<i>Musa paradisiaca</i> (Musaceae)	Laffutharo	Fruit
<i>Plantagoerosa</i> (Plantaginaceae)	Yempat	Leaves, fruits

Ranibaladevi et al listed 32 plant species belonging to 25 families used for dermatological issues among Paite tribe of Manipur. Information was collected by interviewing local traditional healers and the modes of usage with different plants are effectively addressed [7].

Meitei (Manipuri) community inhabiting in the valley regions have the traditional knowledge of using natural herbal shampoo called “Chinghi” from non historical time itself to treat different ailments of hair like anti-ageing of the hair, black and shininess of the hair [12]. It is prepared from the local rice water ‘Chinghi’ along with many herbs. In this rice water, natural herbs and leaves of fruit trees as mentioned in the Table 1 are added and boiled properly. After the ingredients are properly boiled, it is cooled down and sieved using a muslin cloth to remove the impurities and the finally collected clear liquid is used as herbal shampoo. After using the herbal shampoo for washing the hair, the hair is washed properly and no oil is needed to apply on the hair afterwards. It is best to use it within 2-3 days after preparation. The fermented lime is also used as natural herbal shampoo by the Meitei community particularly as anti-ageing for the hair preventing grayness of the

**Table 5:** Plants used for papulosquamous disorders [1,3,5,7]

Scientific name (Family)	Vernacular name	Parts used
For eczema		
<i>Setariapumila</i> (Poaceae)	Hup	Whole plant
<i>Jatropha gossypifolia</i> (Euphorbiaceae)	E-hidak	Leaves, root
<i>Glycosmis pentaphylla</i> (Rutaceae)	Yong komla	Leaves
<i>Tagetespatula</i> (Asteraceae)	Hao-sanarei	Leaves
For psoriasis		
<i>Phyllanthus acidus</i> (Phyllanthaceae)	Gihori	-

**Table 6:** Plants used for wound care [3-7,10,11]

Scientific name (Family)	Vernacular name	Parts used
For wound healing		
<i>Sonchus asper</i> (Asteraceae)	Khom-thokpi	Leaves
<i>Cynodonactylon</i> (Poaceae)	Tingthau	Leaves
<i>Eucalyptus citriodora</i> (Myrtaaceae)	Nasik	Leaves
<i>Gynuracusimba</i> (Asteraceae)	Terapaibi	leaves
<i>Pogostemonbengalensis</i> (Lamiaceae)	Lamthoiding	Leaves, root
<i>Pogostemonparviflavus</i> (Asteraceae)	Sangbrei	Whole plant
<i>Adenostemmalavenia</i> (Asteraceae)	Lalu-kok	Leaves
<i>Cymbopogon flexosus</i> (Gramineae)	Haona	Leaves
<i>Commelinadiffusa</i> (Commenlinaceae)	Wandengkhoibi	-
<i>Curcuma domestica</i> (Zingiberaceae)	Yai-ngang	Rhizome
<i>Crassocephalumcrepidiodes</i> (Asteraceae)	Tera paibi	-
For burns		
<i>Zingiberacapatium</i> (Zingiberaceae)	Lam-shing	Rhizome
<i>Dryopteris marginata</i> (Polypodiaceae)	Lai-chankharang	Leaves
<i>Rumexmaritimus</i> (Polygonaceae)	Torong-khongchak	Whole plant
<i>Artocarpusheterophyllus</i> (Moraceae)	Theibong	-
<i>Luffa cylindrica</i> (Cucurbitaceae)	Sebot	Leaves
<i>Phologacanthusthyriformis</i> (Acanthaceae)	Nongmangkha	-
For aphthous ulcer		
<i>Euphorbia euterophylla</i> (Euphorbiaceae)	Pakhang-leiton	Whole plant
<i>Neptunia oleracea</i> (Fabaceae)	Eshingekaitopi	Leaves
<i>Portulacaoleracea</i> (Portulacaceae)	Leipakkundo	Shoot

hair. It is prepared from the ripe lime locally called “Champra”. First, it is washed properly with the water then the juice is extracted after removing the seeds. Then the fruit along with the peel is cut into small pieces and kept in air tight plastic bottle or glass bottle under the room temperature in dark place. The fermentation process is completed within 2 weeks but the bottle should not be opened until it is completely fermented. After the fermentation is completed, it is diluted in water (1 teaspoon in ½ liter of water) and used as natural herbal shampoo after sieving with muslin cloth locally called “Phadi”. Herbal hair lotion from the crushed amla fruit (*Emblicaofficinalis*) and fresh lime (*Citrus aurantifolia*) peel which was soaked for overnight was also used as hair lotion to wash the hair after washing with artificial shampoo. Then it is washed with fresh water again. Such types of hair lotion

**Table 7:** Plants used for skin and hair care [4-6,9,12-19]

Scientific name (family)	Vernacular name	Parts used
Emolient		
<i>Polygonum perfoliatum</i>	Lihhar	Whole plant
Hair supplements		
<i>Agerathum conyzoides</i> (Asteraceae)	Khong-jai-napi	Leaves
<i>Cymbopogon flexuosus</i> (Poaceae)	Houna	Leaves
<i>Citrus laltipes</i> (Rutaceae)	Hei-ribob	Fruit
<i>Eupatorium odoratum</i> (Asteraceae)	Hanurei	Leaves
<i>Eucalyptus citriodora</i> (Myrtaceae)	Nasik	Leaves
<i>Pogostemon bengalensis</i> (Lamiaceae)	Lamthoiding	Leaves, root
<i>Pogostemon parviflorus</i> (Asteraceae)	Sangbrei	Whole plant
<i>Spondias pinnata</i> (Anacardiaceae)	Heining	Fruit, leaves
<i>Kaempferia galangal</i> (Zingiberaceae)	Yaithamnamanbi	Rhizome
<i>Rhus semialata</i> (Anacardiaceae)	Heimang	Leaves, fruit
<i>Allium odoratum</i> (Alliaceae)	Maroinakupi	Leaves
<i>Oxalis corniculata</i>	Yensil	Whole plant
Components in traditional shampoo preparation		
<i>Emblica officinalis</i> (Euphorbiaceae)	Heikru	Fruit
<i>Glycomis arborea</i> (Rutaceae)	Yong komla	Leaves
<i>Centella asiatica</i> (Apiaceae)	Peruk	Whole plant
<i>Hibiscus rosachinensis</i> (Malvaceae)	Juba-kushum	Leaves, flower
<i>Xylosmalongifolia</i> (Flacourtiaceae)	Nong-leishang	Leaves
<i>Eucalyptus globulus</i> (Malvaceae)	Nasik	Leaves
<i>Ageratum conyzoides</i> (Asteraceae)	Khonggainapi	Tender shoot, leaves
<i>Artabotrys hexapetalus</i> (Annonaceae)	Chini-champa	Leaves, flower
<i>Spondias pinnata</i> (Anacardiaceae)	Heining	Leaves, fruit
<i>Anisomeles indica</i> (Lamiaceae)	Thoidindagouba	Leaves
<i>Hydrocotylesibthoroides</i> (Apiaceae)	Lei peruk	Whole plant
<i>Pogostemon parviflorus</i> (Lamiaceae)	Sang-brei	Tender shoot
<i>Citrus limonia</i> (Rutaceae)	Heijang	Leaves, fruit peel
<i>Citrus aurantifolia</i> (Rutaceae)	Champra	Leaves, fruit peel
<i>Maglania hodgsonii</i> (Maglonaceae)	U-thambalagangba	Flower
<i>Citrus sinensis</i> (Rutaceae)	Komla	Fruit peel
<i>Tegetes erecta</i> (Asteraceae)	Sanareiatonba	Leaves
<i>Tegetes africana</i> (Asteraceae)	Housanarei	Leaves
<i>Leucas aspera</i> (Lamiaceae)	Mayanglembum	Leaves
Portulacaceae (Portulacaceae)	Laibakkundo	Whole plant
<i>Meyna laxiflora</i> (Rubiaceae)	Heibi	Leaves
<i>Artemisia vulgaris</i> (Asteraceae)	Laibakgou	Leaves
<i>Vitex negundo</i> (Verbenaceae)	Urikshibi	Tender shoot, leaves
<i>Rhus chinensis</i> (Anacardiaceae)	Heimang	Leaves

(Contd...)

**Table 7:** (Continued)

Scientific name (family)	Vernacular name	Parts used
<i>Acanthus mollis</i> (Acanthaceae)	Krishna khumbam	Leaves
<i>Oxalis debilis</i> (Oxalidaceae)	Inkholyensil	Whole plant
<i>Citrus maxima</i> (Rutaceae)	Nobab	Leaves
<i>Callistemon citrinus</i> (Myrtaceae)	Balab lei	Shoot
<i>Hibiscus subdariffa</i> (Malvaceae)	Silotsougri	Leaves
<i>Mussaendaro xburghii</i> (Rubiaceae)	Hanu-rei	Leaves
<i>Acorus calamus</i> (Aeraceae)	O-hidak	Tender leaves
<i>Citrus reticulata</i> (Rutaceae)	Komla heithum	Fruit peel
<i>Bacopa monneiri</i> (Scrophulariaceae)	Laibakkundomacha	Leaves
<i>Artemisia maritime</i> (Asteraceae)	Ching laibakgou	Leaves
<i>Oxalis corniculata</i> (Oxalisaceae)	Lam yensil	Whole plant

give a cool effect to the head and softness of hair and also prevent graying of hair.

## CONCLUSION

Unfortunately, absence of proper documentation of the traditional knowledge leads to its less understanding and is likely to be lost when it is not passed on to the next generation. Most of the systematic studies in this topic focus only on epidemiological cross sectional data analysis. True clinical trials as well as scientific laboratory based examinations to decipher the contents of the herbs were not carried out effectively. Hence, along with the basic preservation of the traditional knowledge, it is very important to find out the true scientific facts behind its efficacy, so that proper dosing and route of administration can be formulated. The medicines may then be made available beyond this region, which is very much needed in the current era of emerging resistance to common drugs.

## REFERENCES

- Singh T, Devi AR, Sharma HR, Sharma HM. Medicinal plants used in the treatment of various skin diseases by the scheduled caste community of Andro village in Imphal east district, Manipur (India). *Int Scien J.* 2015;2:11-9.
- Jain V, Verma SK. Assessment of credibility of some folk medicinal claims on *Bombax ceiba* L. *Indian J Tradit Knowl.* 2014;13:87-94.
- Athokpam R, Bawari M, Choudary MD. A review on medicinal plants of Manipur with special reference to hepatoprotection. *Int J Adv Pharm Res.* 2014;5:182-91.
- Devi I, Devi U, Singh EJ. Wild medicinal plants in the hill of Manipur, India: a traditional therapeutic potential. *Int J Scien Res Publicat.* 2015;6:1-9.
- Leishangthem S, Sharma LD. Study of some important medicinal plants found in Imphal-East district, Manipur, India. *Int J Scien Res Publicat.* 2014;4:631-6.
- Singh V, Shah N, Rana DK. Medicinal importance of unexploited vegetable under North Eastern regions of India. *J Med Plants Stud.*

- 2015;3:33-6.
7. Devi LR, Das AK. Study on the medicinal plants used for dermatological healthcare management practices by the Paite tribe of Manipur, India. *Int J Innovat Res Scien Technol.* 2015;1:192-6.
  8. Saha P, Talukar AD, Ningthoujam SS, Choudary MD, Nath D, Nahar L, et al. Chemical composition, antimicrobial and antioxidant properties of seed oil plants of North East India: a review. *TANG (Human Med).* 2015;1:1-17.
  9. Usharani L, Singh WR, Surodhani S. An ethnomedicinal plant- a less known spices used by Meitei community of Manipur. *Asian J Plant Scien Res.* 2015;5:84-7.
  10. Barua CC, Bora M, Saikia B, Hazarika M, Misri J, Chandrabarua I. Nutritional evaluation of few selected medicinal plants of North Eastern region. *Int J Pharm Bio Scien.* 2015;6:538-46.
  11. Ningombam DS, Singh PK. Ethnobotanical study of *phlogacanthbusthysiformis* Nees: a conserved medicinal plant of Manipur, Northeast India. *Int J Herbal Med.* 2014;1:10-4.
  12. Singh SR, Phurailatpam AK, Senjam P. Identification of the plants use as natural herbal shampoo in Manipur. *Afr J Trad Compliment Altern Med.* 2014;11:135-42.
  13. Nongemaithe R, Das AK. Less known ethnobotanical uses of Maring tribe of Manipur. *Int J Innovat Res Scien Technol.* 2015;1:142-3.
  14. Devi OA, Das M, Saikia A, Das P, Sharma D. Evaluation of total mineral, calcium, selenium, iron content of ten medicinal plant extracts of Manipur having anti-inflammatory properties. *J Med Plants Stud.* 2016;4:189-94.
  15. Barua CC, Bora M, Saikia B, Hazarika M, Misri J, Chandrabarua I. Quantitative analysis of proximate and mineral composition of a few important medicinal plants of North East region. *Int J Appl Biol Pharm Technol.* 2015;6:188-93.
  16. Singh SL, Moirangthem N, Singh SS. Medicinal plants in Manipur: a survey. *Int J Pharm Scien.* 2015;5:931-7.
  17. Prakash N, Ansari MA, Punita P, Sharma PK. Indigenous traditional knowledge and usage of folk bio-medicines among Rongmei tribe of Tamenglong district of Manipur, India. *Afr J Tradit Complement Altern Med.* 2014;11(3):239-47.
  18. Devi WR, Singh SBS, Singh CB. Antioxidant and anti-dermatophytic properties leaf and stem bark of *Xylosmalongifolium* clos. *BMC Complement Altern Med.* 2013;13:1-9.
  19. Moirangthem DS, Talukdar NC, Bora U, Kasoju N, Das RK. Differential effects of *Oroxylum indicum* bark extracts: antioxidant, antimicrobial, cytotoxic and apoptotic study. *Cytotechnology.* 2013;65:83-95.
  20. Geng A, Dufrensne RG. Complementary and alternative medicine. *Textbook of Dermatology*, Bologna JL, Jorizzo JL, Rapini RP as chief editors. 2<sup>nd</sup> edition, MOSBY Elsevier, Spain, 2043-52.

Copyright by Bishurul Hafi, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Source of Support:** Nil, **Conflict of Interest:** None declared.