Dermatologically relevant biomedicinal plants in Manipur, India

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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 scabetic 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 93.05°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 20507 sq.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 (Pubmedand 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 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. A total of 31 plants were seen used as antifungal agents, 21 antibacterial agents, 16 anti scabetic 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.

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 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 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 scabetic 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 biomedicinal 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].

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].
| Scientific name (Family) | Vernacular name | Parts used |
|--------------------------|-----------------|------------|
| **Antifungal**           |                 |            |
| Juglans regia (Juglandaceae) | Heijuga/Heijugak | Leaves |
| Lithocarpus elegans (Fagaceae) | Kahi | Stem bark |
| Alpinia galangal (Zingiberaceae) | Kanghoo | Rhizome |
| Nicotiana plumbaginifolia (Solanaceae) | Meitei hidak mana | Leaves |
| Capsicum annuum (Solanaceae) | Meitei Morok | Leaves |
| Drymarracordata (Caryophyllaceae) | Tandanpambi | Whole plant |
| Ipomoea aqqa (Convolvulaceae) | Kolamni | Whole plant |
| Bombax ceiba | Tera | - |
| Cassia fistula | Chahui | - |
| Acacia catechu (Fabaceae or Leguminosaceae) | Khati | Seed, tender, pod |
| Curcuma angustifolia (Zingiberaceae) | Yaipal | Inflorescence |
| Mikania scandens (Asteraceae) | Uri hingchabi | Whole plant |
| Lantana lamara (Verbenaceae) | Nongbaslei | Leaves, fruit |
| Plectranthus stemfilious (Lamiaceae) | Khoji | Leaves |
| Toona ciliate (Lamiaceae) | Tairel | Leaves |
| Vitex trifolia (Verbenaceae) | Urk-shibi | Leaves |
| Calotropis gigantean (Asclepiadaceae) | Ang-got | Shoot |
| Pista satiotes | Gangjao | Whole plant |
| Ocimum sanctum (Lamiaceae) | Lurimi | Leaves |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Pandanus odoratissimus (Pandanaeaceae) | Gomlinghei | Flower |
| Rumex maritimus (Polygonaceae) | Torongkhongchak | Leaves |
| Brassica juncea (Brassicaceae) | Hangam | - |
| Brassica rapa (Brassicaceae) | Salgam | - |
| Croton tiglium (Euphorbiaceae) | Koni-bih | - |
| Helianthus annus (Asteraceae) | Numtiei | - |
| Madhuca longifolia (sapotaceae) | Nageshor | - |
| Olea europe (Oleaceae) | Chorfon | - |
| Ricinus communis (Euphorbiaceae) | Kege | - |
| Capsellabursapastoris (Brassicaceae) | Chantruk | - |
| **Antibacterial**         |                 |            |
| Jatropha curcas (Euphorbiaceae) | Awa kege | Latex, seed |
| Bauhinia acuminata (Leguminosaceae) | Chingthraoangouba | Whole plant |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Pictus maritimus (Solanaceae) | Tairel | Leaves |
| Curcuma longa (Zingiberaceae) | Yaingang | Rhizome |
| Drymarracordata (Caryophyllaceae) | Tandanpambi | Whole plant |
| Buddleja asistatica (Buddlejaceae) | Nangurei | - |
| Gossypium arboreum (Malvaceae) | Chingthraoangouba | Whole plant |
| Manihot esculenta (Euphorbiaceae) | U-mangra | Leaves |
| Nerium indicum (Apocynaceae) | Kabireiakhangba | Leaves |
| Tagetes patula (Asteraceae) | Tairen | Leaves |
| Vitex trifolia (Lamiaceae) | Urinkshibi | Whole plant |
| **For Gonorrhea**          |                 |            |
| Phyllanthus acidus (Phyllanthaceae) | Gihori | - |
| Equisetum debile (equisetaceae) | Lai-utong | Leaves |
| Houttuynia cordata (Sauraceae) | Toningkho | Leaves, rhizome |
| Magnolia champaca (Magnoliaceae) | Leihao | Inflorescence, root |
| **For acne**               |                 |            |
| Azadirachtaindica (Meliaceae) | Nim | Leaves |
| Catharanthus roseus (Apocynaceae) | Saheb lei | - |
| Drymarracordata (Caryophyllaceae) | Tandanpambi | - |
| Zingiber zerumbet (Zingiberaceae) | Singhla | Rhizome |
| Dioscorea alata (Dioscoreaceae) | Hakaisan | Tuber |
| **For leprosy**            |                 |            |
| Azadirachtaindica (Meliaceae) | Nim | Leaves |
| Calotropis gigantean (Asclepiadaceae) | Ang-got | Shoot |
| Jatropha gossypifolia (Euphorbiaceae) | Awa kege | Latex, seed |
| Bauhinia acuminata (Leguminosaceae) | Chingthraoangouba | Whole plant |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Lantana camara (Verbenaceae) | Nongbaslei | Leaves, fruit |
| Plectranthus stemfilious (Lamiaceae) | Khoji | Leaves |
| Toona ciliate (Lamiaceae) | Tairel | Leaves |
| Vitex trifolia (Verbenaceae) | Urk-shibi | Leaves |
| Calotropis gigantean (Asclepiadaceae) | Ang-got | Shoot |
| Pista satiotes | Gangjao | Whole plant |
| Ocimum sanctum (Lamiaceae) | Lurimi | Leaves |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Pandanus odoratissimus (Pandanaeaceae) | Gomlinghei | Flower |
| Rumex maritimus (Polygonaceae) | Torongkhongchak | Leaves |
| Brassica juncea (Brassicaceae) | Hangam | - |
| Brassica rapa (Brassicaceae) | Salgam | - |
| Croton tiglium (Euphorbiaceae) | Koni-bih | - |
| Helianthus annus (Asteraceae) | Numtiei | - |
| Madhuca longifolia (sapotaceae) | Nageshor | - |
| Olea europe (Oleaceae) | Chorfon | - |
| Ricinus communis (Euphorbiaceae) | Kege | - |
| Capsellabursapastoris (Brassicaceae) | Chantruk | - |
| **For scabies**            |                 |            |
| Jatropha curcas (Euphorbiaceae) | Awa kege | Latex, seed |
| Lithocarpus elegans (Fagaceae) | Kahi | Stem bark |
| Arundo donax (Poaceae) | Yenghou | Tende shoots |
| Mimosa puda (Mimosaceae) | Kangaphalekathi | Whole plant |
| Azadirachtaindica (Meliaceae) | Nim | Leaves |
| Bauhinia acuminata (Leguminosaceae) | Chingthraoangouba | Whole plant |
| Capparis tenera (Capparaceae) | Kakyelkuhlu | Leaves |
| Curcuma longa (Zingiberaceae) | Yaingang | Rhizome |
| Drymarracordata (Caryophyllaceae) | Tandanpambi | Whole plant |
| Buddleja asiatica (Buddlejaceae) | Nangurei | - |
| Gossypium arboreum (Malvaceae) | Chingthraoangouba | Whole plant |
| Manihot esculenta (Euphorbiaceae) | U-mangra | Leaves |
| Nerium indicum (Apocynaceae) | Kabireiakhangba | Leaves |
| Tagetes patula (Asteraceae) | Tairen | Leaves |
| Vitex trifolia (Lamiaceae) | Urinkshibi | Whole plant |
| **For leprosy**            |                 |            |
| Azadirachtaindica (Meliaceae) | Nim | Leaves |
| Calotropis gigantean (Asclepiadaceae) | Ang-got | Shoot |
| Jatropha gossypifolia (Euphorbiaceae) | Awa kege | Latex, seed |
| Bauhinia acuminata (Leguminosaceae) | Chingthraoangouba | Whole plant |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Lantana camara (Verbenaceae) | Nongbaslei | Leaves, fruit |
| Plectranthus stemfilious (Lamiaceae) | Khoji | Leaves |
| Toona ciliate (Lamiaceae) | Tairel | Leaves |
| Vitex trifolia (Verbenaceae) | Urk-shibi | Leaves |
| Calotropis gigantean (Asclepiadaceae) | Ang-got | Shoot |
| Pista satiotes | Gangjao | Whole plant |
| Ocimum sanctum (Lamiaceae) | Lurimi | Leaves |
| Alpinia galanga (Zingiberaceae) | Aital | Rhizome |
| Pandanus odoratissimus (Pandanaeaceae) | Gomlinghei | Flower |
| Rumex maritimus (Polygonaceae) | Torongkhongchak | Leaves |
| Brassica juncea (Brassicaceae) | Hangam | - |
| Brassica rapa (Brassicaceae) | Salgam | - |
| Croton tiglium (Euphorbiaceae) | Koni-bih | - |
| Helianthus annus (Asteraceae) | Numtiei | - |
| Madhuca longifolia (sapotaceae) | Nageshor | - |
| Olea europe (Oleaceae) | Chorfon | - |
| Ricinus communis (Euphorbiaceae) | Kege | - |
| Capsellabursapastoris (Brassicaceae) | Chantruk | - |
| **For scabies**            |                 |            |
| Jatropha curcas (Euphorbiaceae) | Awa kege | Latex, seed |
| Lithocarpus elegans (Fagaceae) | Kahi | Stem bark |
| Arundo donax (Poaceae) | Yenghou | Tende shoots |
| Mimosa puda (Mimosaceae) | Kangaphalekathi | Whole plant |
| Azadirachtaindica (Meliaceae) | Nim | Leaves |
| Bauhinia acuminata (Leguminosaceae) | Chingthraoangouba | Whole plant |
| Capparis tenera (Capparaceae) | Kakyelkuhlu | Leaves |
| Curcuma longa (Zingiberaceae) | Yaingang | Rhizome |
| Drymarracordata (Caryophyllaceae) | Tandanpambi | Whole plant |
| Buddleja asiatica (Buddlejaceae) | Nangurei | - |
| Gossypium arboreum (Malvaceae) | Chingthraoangouba | Whole plant |
| Manihot esculenta (Euphorbiaceae) | U-mangra | Leaves |
| Nerium indicum (Apocynaceae) | Kabireiakhangba | Leaves |
| Tagetes patula (Asteraceae) | Tairen | Leaves |
| Vitex trifolia (Lamiaceae) | Urinkshibi | Whole plant |

(Contd...)
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 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 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 then the juice is extracted. 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 then the juice is extracted. 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 then the juice is extracted. 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 then the juice is extracted.

| Scientific name (Family) | Vernacular name | Parts used |
|--------------------------|----------------|------------|
| Bauhinia acuminata (Leguminosae) | Chingthranoangonba | Stem bark |
| Capparis tenera (Capparaceae) | Kakyelkhujin | Leaves |
| Chenopodium Albans (Amaranthaceae) | Monsaobi | - |
| Acorus calamus (Acanthaceae) | Oak-hidak | Leaves, root, rhizome |
| Sagattariasagittifolia (Alicosmataceae) | Koukha | Leaves |
| Curcuma amada (Zingiberaceae) | Yaiheinouman | Whole plant |

| Scientific name (Family) | Vernacular name | Parts used |
|--------------------------|----------------|------------|
| Cassia fistula (Fabaceae) | Chahui | - |
| Alpinia galanga (Zingiberaceae) | Kaang hu | rhizome |
| Musa paradisiaca (Musaceae) | Laffutharo | Fruit |
| Lagenariasicereria (Cucurbitaceae) | Khongdrum | Fruit |
| Caprica papaya (Caricaceae) | Koliamni | Whole plant |
| Bombex ceiba (Bombacaceae) | Tera | - |
| Calotropis gigantean (Apocynaceae) | Angkot | Latex |
| Mussaenda glabra (Rubiaceae) | Hanurei | Roots |
| Alpinia galanga (Zingiberaceae) | Kaang hu | Whole plant |
| Curcuma domestica (Zingiberaceae) | Yai-ngang | Whole plant |
| Plantagoerosa (Plantaginaceae) | Yempat | Leaves, fruits |
| Mimosa pudica (Mimosaceae) | Kangphalekaithabi | Whole plant |
| Ipomeoa aquatica (Convolvulaceae) | Kolamni | Whole plant |
| Caprica papaya (Caricaceae) | Awathabi | - |
| Lagenariasicereria (Cucurbitaceae) | Khongdrum | Fruit |
| Musa paradisiaca (Musaceae) | Laffutharo | Fruit |
| Plantagoerosa (Plantaginaceae) | Yempat | Leaves, fruits |

| Scientific name (Family) | Vernacular name | Parts used |
|--------------------------|----------------|------------|
| Cassia fistula (Fabaceae) | Chahui | - |
| Calotropis gigantean (Apocynaceae) | Angkot | Latex |
| Mussaenda glabra (Rubiaceae) | Hanurei | Roots |
| Stauntonia sp (Acanthaceae) | Koliamni | Whole plant |
| Plantagoerosa (Plantaginaceae) | Yempat | Leaves, fruits |

| Scientific name (Family) | Vernacular name | Parts used |
|--------------------------|----------------|------------|
| Cymbopogon flavidus (Gramineae) | Haona | Leaves |
| Curcuma domestica (Zingiberaceae) | Yai-ngang | Whole plant |
| Arctrochephalumcrepidioides (Asteraceae) | Tera paibi | - |
| Zincbergcapitatum (Zingiberaceae) | Lam-shing | Rhizome |
| Dryopteris marginata (Polypodiaceae) | Lai-chankharang | Leaves |
| Rumexmaritimus (Polygonaceae) | Torong-khongchak | Whole plant |
| Artocarpus heterophyllus (Moraceae) | Theibong | - |
| Luffa cylindrica (Cucurbitaceae) | Sebot | Leaves |
| Tagetes patula (Asteraceae) | Hao-sanarei | Leaves |
| Gynura coccinella (Balsaminaceae) | Hanurei | Roots |
| Asclepias curassavica (Asclepiadaceae) | Yaiheinouman | Whole plant |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
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| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
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| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
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| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
| Euphorbia heterophylla (Euphorbiaceae) | Tera paibi | - |
Table 7: Plants used for skin and hair care [4-6,9,12-19]

| Scientific name (family) | Vernacular name | Parts used |
|--------------------------|----------------|------------|
| Emolient                 |                |            |
| Polygonum perforiatum    | Lihhar         | Whole plant|
| Hair supplements          |                |            |
| Ageratum conyzoides      | Khong-jai-napi | Leaves     |
| (Asteraceae)             |                |            |
| Cymbopogan flexuosus     | Houna          | Leaves     |
| (Poaceae)                |                |            |
| Citrus latipes (Rutaceae)| Hei-ribob      | Fruit      |
| Eupatorium odoratum (Asteraceae) | Hanurei | Leaves | |
| Eucalyptus citridora (Myrtaceae) | Nasik | Leaves | |
| Pogostemon bengalensis (Lamiaceae) | Lamthihding | Leaves, root | |
| Pogostemonparviflorus (Asteraceae) | Sangbrei | Whole plant | |
| Spondiaspinnata (Anacardiaceae) | Heining | Fruit, leaves | |
| Kaempferia galangal (Zingiberaceae) | Yaithammamanbi | Rhizome | |
| Rhussemia lata (Anacardiaceae) | Heimang | Leaves, fruit | |
| Allium odorum (Alliaceae)  | Maroinakupi    | Leaves     |
| Oxalis corniculata       | Yensil         | Whole plant|
| Components in traditional shampoo preparation | | |
| Emblica officinalis (Euphorbiaceae) | Heikru | Fruit | |
| Glycomia superstarosa (Rutaceae) | Yong komia | Leaves | |
| Centella asiatica (Apoicaceae) | Peruk | Whole plant | |
| Hibiscus rosachinensis (Malvaceae) | Juba-kushum | Leaves, flower | |
| Xylosma longifoliosa (Ficouliaceae) | Nong-leishang | Leaves | |
| Eucalyptus globulus (Malvaceae) | Nasik | Leaves | |
| Ageratum conyzoides (Asteraceae) | Khonggainapi | Tender shoot, leaves | |
| Artabotryshexapetalus (Annacardaceae) | Chini-champa | Leaves, flower | |
| Spondiaspinnata (Annacardiaceae) | Heining | Leaves, fruit | |
| Anisomelesindica (Lamiaceae) | Thoidindagouba | Leaves | |
| Hydrocotylus (Apoicaceae) | Lei peruk | Whole plant | |
| Pogostemonparviflorus (Lamiaceae) | Sang-breii | Tender shoot | |
| Citrus limonia (Rutaceae)  | Heijang       | Leaves, fruit peel | |
| Citrus aurantifolia (Rutaceae) | Champa | Leaves, fruit peel | |
| Maglonia hodgsonii (Magonaceae) | U-thambalagabga | Flower | |
| Citrus sinensis (Rutaceae) | Komla | Fruit peel | |
| Tegetes erecta (Asteraceae) | Sanareiahonba | Leaves | |
| Tegetes africana (Asteraceae) | Housanarei | Leaves | |
| Leucas aspera (Lamiaceae) | Mayanglembum | Leaves | |
| Portulicaolaracea (Portulicaceae) | Laibakkundo | Whole plant | |
| Meynalaxiflora (Rubiaaceae) | Heibi | Leaves | |
| Artimisia vulgaris (Asteraceae) | Laibakgou | Leaves | |
| Vitexnegundo (Verbenaceae) | Urikihishi | Tender shoot, leaves | |
| Rhuschinsissi (Annacardaceae) | Heimang | Leaves | |

(Continued...)

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

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