

Medicinal Plants diversity of Fakim Wildlife Sanctuary, Nagaland, India

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Abstract

Fakim Wildlife Sanctuary is located in the foothills of Mt. Saramati in the eastern part of Kiphari district of Nagaland bordering Myanmar. It is located in the world biodiversity hotspot called Indo-Burma. It lies between 25°47' to 25°48' North latitudes and 95°02' to 95°04' East longitudes with the altitude ranges from 1700 – 3000 m amsl. The present paper deals with diversity of medicinal flora of Fakim Wildlife Sanctuary, Nagaland. A total of 173 species consisting of 7 species of pteridophytes, 2 species of gymnosperm, 29 species of monocotyledons and 135 species of dicotyledons were recorded. Of the total species recorded 14 species are found to be rare, vulnerable, endangered and endemic to the region.

Key words: Medicinal plants, Diversity, Fakim Wildlife Sanctuary, Nagaland.

INTRODUCTION

Fakim Wildlife Sanctuary (FWS) is situated in the Patkai Mountain Range in the Eastern part of Nagaland which ranges forms the international boundary between India and Myanmar. The highest peak of the range is Mt. Saramati (3482 m amsl), which is the highest mountain peak in Nagaland. The region is the remotest and botanically rich but an unexplored area (Hynniewta 1994). The area is entirely hilly and the terrain is one of the most rugged with successive hills of varying heights. The region is covered with thick and dense vegetation which harbors rich flora and fauna with several rare, endangered and endemic species. To mention a few endemic species, *Cymbidium tigrinum* Parish ex Hooker, *Ophiorrhiza gracilis* Kurz, *Rhododendron macabeaeanum* Watt ex I.B. Balfour; medicinal plants like *Panax pseudo-ginseng* Wallich, *Taxus wallichiana* Zuccarini, *Paris polyphylla* Smith and some rare and threatened species such as *Pleione humilis* D. Don, *Dendrobium nobile* Lindley, *Balanophora dioica* R. Brown, *Epipogium roseum* (D. Don) Lindley etc. Primitive plants such as *Exbucklandia populnea* (R. Brown ex Griffith) R.W. Brown, *Actinodaphne obovata* (Nees) Blume, *Beilschmiedia assamica* Meissner, *Betula alnoides* Buchanan-Hamilton etc. are also found. The richness and diversity of the region is the result of interplay of geographical location, climate, and topography.

Apart from Hynniewta (1994), who gave a brief account of Botany of Mt. Saramati and its Environments, no other comprehensive detailed account of the flora of Mt. Saramati region and FWS is available. A few earlier workers who had done botanical collections in the state are Clarke (1886, 1889), Hooker (1872 – 1897), Kanjilal *et al* (1934 – 1940), Bor (1942), Jamir & Rao (1988), Singh & Sinha (1994), Mao & Gogoi 2010,

. Hynniewta (1994) remarked “A floristic study of this region has not been made so far by earlier workers, owing mainly to the lack of road communication, infestation of the forests with wild animals and therefore, being considered inaccessible and risky for purposes of botanical exploration up-to-date”, which holds true till date.

Recently, medicinal plants of the state has been recorded by some workers including Deorani & Sharma (2007); Changhija (1992, 1999); Changkija *et al* (1994, 2010a, b), which documented a total of 656 medicinal plants of Nagaland.

Study area

Fakim Wildlife Sanctuary (FWS) is located in the foothills of Mt. Saramati in the eastern part of Kiphiri district of Nagaland bordering to Myanmar. It lies between 25°47' to 25°48' N latitudes and 95°02' to 95°04' E longitudes under Pungro Sub-division, Kiphire. It covers an area of 641 hectares and was declared as a Wildlife Sanctuary in the year 1986. It is bounded by Mt. Saramati in the east, Fakim village on the west, Wongtsuvong village on the north and Thanamir village on the south. The region is predominantly inhabited by Yimchunger-Naga tribe. The altitude of the sanctuary ranges from 1700 to 3000 m amsl. The sanctuary is known for the famous rare and endangered Blyth's Tragopan (*Tragopan blythii*) which is the state bird of Nagaland.

‘Fakim’, the name of the village, where the sanctuary is located, which literally means “surrounded of Salt lick pool”. As the name indicates, there are as many as 50 salt lick pools in and around FWS. The region receives moderately high rainfall with humid and cold climatic conditions. The annual rainfall varies from 200 to 300 cm. The average temperature of the area is 5 °C during winter and 29 °C during summer.

The area is covered with thick virgin primary forest of temperate broad leaved to sub-alpine forest types (Champion & Seth 1968). The top canopy is constituted by several commercially important species such as *Phoebe hainesiana* Brandis, *Michelia cathcartii* Hooker f. & Thomson, *Betula alnoides* Buchanan-Hamilton, *Lithocarpus xylocarpa* (Kurz) Markgraph, *Quercus lamellosa* Smith etc. The middle storey is composed of *Alnus nepalensis* D. Don, *Acer* spp., *Lyonia ovalifolia* (Wallich) Drude., *Cinnamomum* spp., *Rhododendron* spp. etc. The lower storey is constituted by shrubby species such as *Daphne involucrata* Wallich, *Debregeasia longifolia* Weddell, *Brassaiopsis glomerulata* (Blume) Regel, *Leucosceptrum canum* Smith etc. The tree trunk and branches are heavily covered with mosses and lichens that offer suitable habitat for other epiphytes such as *Rhododendron* spp., *Agapetes* spp., *Vaccinium* spp., *Aeschynanthus* spp. along with many species of orchids of the genera like *Dendrobium*, *Vanda*, *Cymbidium*, *Bulbophyllum*, etc. and many types of epiphytic ferns such as *Lepisorus* spp., *Polypodium* spp. etc. The moist, humus rich forest floor harbors luxuriant growth of herbaceous species such as *Ardisia macrocarpa* Wallich, *Anaphalis* spp., *Seigesbeckia orientalis* Linnaeus, *Carex* spp., *Cyperus* spp. and ground orchid like *Galeola* sp., *Habenaria* sp., *Calanthe* sp., *Malaxis* sp. etc. Some areas of the sanctuary are covered by vigorous growth of bamboo brakes form by *Sinarundinaria rolloana* (Gamble) Chao & Renvoize.

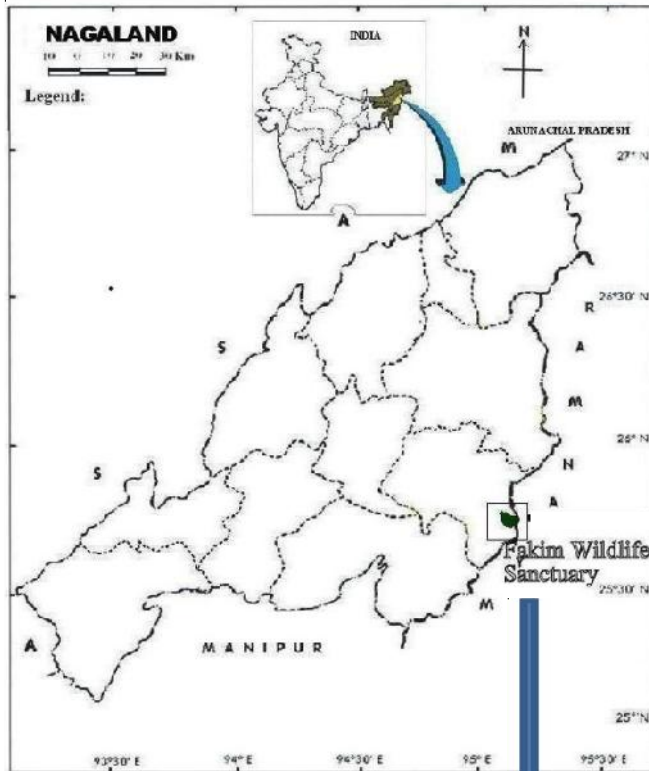
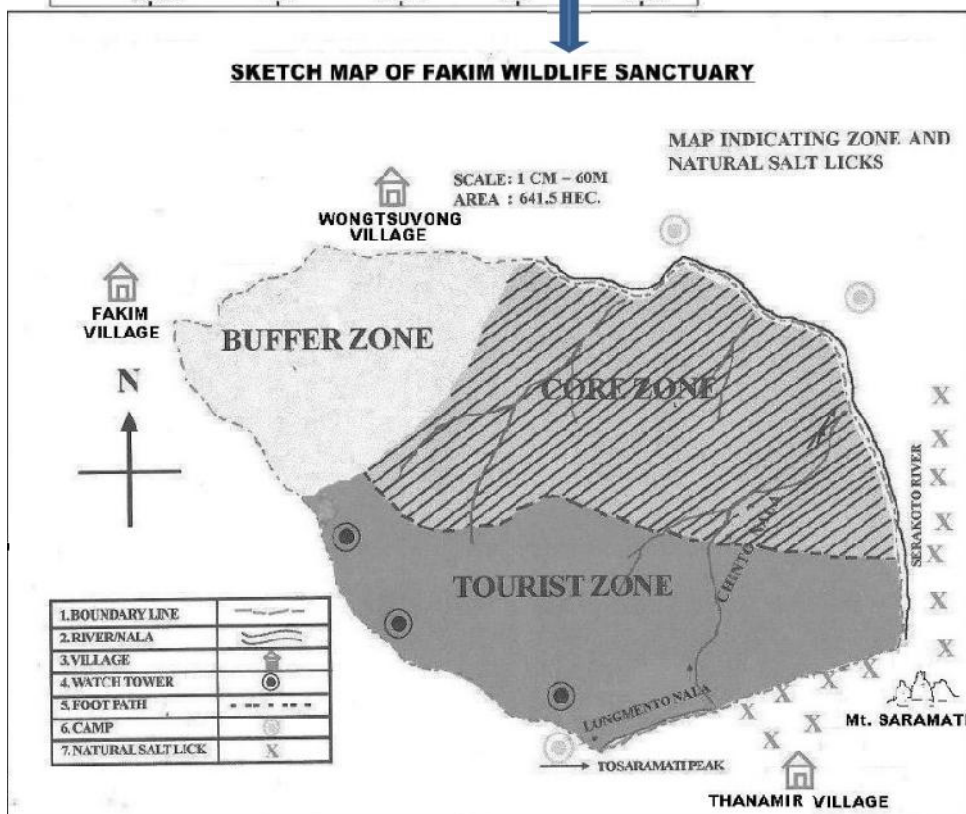


Fig.1. Location map of Fakim wildlife sanctuary.



The sub-alpine vegetation is constituted by shrubby plants like *Gaultheria griffithiana* Wight, *Viburnum cotinifolium* D. Don, *Hypericum hookerianum* Wight & Arnott, etc. and herbaceous species such as *Hypericum elodeoides* Choisy, *Impatiens racemosa* DC., *Gentiana pedicellata* (Wallich *ex* D. Don) Grisebach, *Geranium nepalense* Sweet, etc.

MATERIAL AND METHODS

The present study was carried out during 2007–2011 in Fakim Wildlife Sanctuary to document the diversity of medicinal flora along with the studies on iys floristic diversity. Extensive field trips were made to FWS covering all seasons to collect plant specimens. Forest guards as well as local people are taken to the field for protection from animals and to acquire the usage of plants and other related information of the plants. The collected plant specimens were taken to village elders and knowledgeable persons to authenticate the traditional use, and also consulted with the relevant available literatures. The collected specimens were mounted and preserved following the standard procedure (Jain & Rao, 1977) and identified using published floras (Hooker 1872–1897; Kanjilal *et al* 1934–1940; Polunin & Stainton 1984; Haridasan & Rao 1985, 1987). The collected plant specimens were deposited in the Herbarium of the Botany Department, Nagaland University. For to determine the rare and endangered plants Nayar & Sastry (1987, 1988, 1990) was largely followed.

RESULTS AND DISCUSSION

The present investigation recorded 173 species of medicinal plants belonging to 130 genera and 76 families consisting of 7 species of pteridophytes, 2 species of gymnosperm, 29 species of monocotyledons and 135 species of dicotyledons. The plants are arranged alphabetically with their family, habit, local name, part used and medicinal uses in Table 1. Out of the total plant species studied, 29 species are trees, 24 species are shrubs, 17 species are climbers and 103 are herbs (Fig. 2). Analysis on the basis of plant parts utilized reveals that 58 species are used through leaves, 43 whole plant, 41 roots, rhizomes & tuber, 15 bark, 7 inflorescence & flowers, 27 fruits and 8 seeds (Fig.3). After consultations with the local people and with the relevant literatures, the some species (Table 2) are prioritized. The first ten dominant families are Asteraceae (14 spp.), Rosaceae (7 spp.), Rubiaceae (7 spp.), Polygonaceae (6 spp.), Rutaceae (5 spp.), Ranunculaceae (5 spp.) Orchidaceae (5 spp.), Araliaceae (4 spp.), Ericaceae (4 spp.) and Liliaceae (4 spp.) (Fig. 4).

The flora also contains many primitive angiosperms, primitive cultivars and land races, endemic, rare, threatened and endangered plant species. The primitive angiosperms belonging to Ranunculaceae, Lauraceae, Illiciaceae, Betulaceae, Chloranthaceae, Lardizabalaceae, Myricaceae were recorded. Some wild relatives of cultivated plants recorded during the study are *Begonia* spp. *Cinnamomum* spp., *Elaeocarpus* sp., *Elaeagnus* spp., *Fragaria* sp., *Illicium* sp. *Piper* spp., *Rhododeandron* spp., *Rosa* sp., *Rubus* spp., etc. Species found to be rare, vulnerable, endangered and endemic to the region are *Balanophora dioica*; *Taxus wallichiana* Zuccarini; *Valeriana hardwickii*, *V. jatamansi*; *Schima khasiana*; *Rubia manjith*; *Rhododendron arboreum* ssp. *delavayi*; *Paris polyphylla* var. *polyphylla*, *Paris polyphylla* var. *fargesii*; *Panax assamicus*, *Panax pseudo-ginseng*; *Illicium griffithii*; *Vanda coerulea*, *Dendrobium nobile*, *Dendrobium densiflorum* and *Cinnamomum zeylanicum*.

Besides floristic wealth, the sanctuary is home to many wild animals, such as himalayan black bear, clouded leopard, hollock gibbon, lion-tailed macaque, tiger, marbled cat, barking deer, golden langur, wild boar, civet cat, fox, pangolin, porcupine, blyth's tragopan, hornbill, green pigeon, hawk, woodpecker, emerald dove, great himalayan barbet etc.

Table 1. Medicinal plants of Fakim wildlife sanctuary

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Achyranthes bidentata</i> Blume [Amaranthaceae]; <i>Aok rhua</i> ; Rongsen 2123	Herb	Aerial parts	Anorexia, constipation, colic, liver disorder. Astringent, cardio tonic, carminative, diuretic, purgative.
<i>Actinodaphne obovata</i> Blume [Lauraceae]; <i>Warojakshi</i> ; Rongsen 1753	Tree	Leaf, bark	Menstrual disorder. Bark for fractures.
<i>Ageratum conyzoides</i> Linnaeus [Asteraceae]; <i>Akumehr</i> ; Rongsen 1721	Herb	Leaf, root	Haemostatic; anti-inflammatory and antiallergic.
<i>Albizia julibrissin</i> Durazzini [Mimosaceae]; <i>Topok</i> ; Rongsen 1720	Tree	Bark	Antidandruff.
<i>Ainsliaea pteropoda</i> DC. [Asteraceae]; <i>Teramesu</i> ; Rongsen 1724	Herb	Root	Diuretic, Decoction of the roots is taken to relief stomach pain.
<i>Alnus nepalensis</i> D. Don [Betulaceae]; <i>Sangsangki</i> ; Rongsen 0336	Tree	Leaf, root	Haemostatic. Decoction of the root for diarrhoea.
<i>Amphineuron opulentum</i> (Kaulf) Holttum [Thylypteriaceae]; <i>Maachai</i> ; Rongsen 0131	Herb	Leaf	Toothache, antiseptic, fronds used to drive away fleas and mites.
<i>Aristolochia cathartii</i> Hooker f. [Aristolochiaceae]; <i>Ahupi</i> ; Rongsen 2128	Climber	Root	Stomach ailments, diuretic, antidote for snake bite and sting of insects.
<i>Artemisia indica</i> Wallich [Asteraceae]; <i>Ningro</i> ; Rongsen 1579	Herb	Leaf	Asthma, fever, bronchitis, diarrhoea, skin diseases, rheumatism. Anthelmintic, purgative, stomachic.
<i>Artemisia nilagirica</i> (Clarke) Pampanini [Asteraceae]; <i>Ningro</i> ; Rongsen 0360	Herb	Leaf	Malaria, haemostatic, also used as insecticides.
<i>Arisaema tortuosum</i> (Wallich) Schott [Araceae]; <i>Apighibo</i> ; Rongsen 2150	Herb	Tuber, seed	Insect repellent, anthelmintic; seeds colic.
<i>Asparagus filicinus</i> Buchanan-Hamilton ex D. Don (Liliaceae); <i>Komoksurong</i> ; Rongsen 1791	Herb	Root	Appetizer, tonic, aphrodisiac, astringent.
<i>Asplenium nidus</i> Linnaeus [Aspleniaceae]; <i>Janger</i> ; Rongsen 0132	Herb	Shoot, Leaf	Shoot used for sores and ulcers. Leaf paste used as antiparasitic against lice
<i>Balanophora dioca</i> R. Brown ex Royle [Balanophoraceae]; Rongsen 2175	Herb	Inflor- escence	The inflorescence is used as an aphrodisiac. It is used in cough syrup.
<i>Bauhinia vahlii</i> (Wight. & Arnott) Bentham [Caesalpinaceae]; <i>Tafili</i> ; Rongsen 1531	Climber	Seed	The pods are roasted and seed are eaten to regulate blood pressure.
<i>Begonia palmata</i> D. Don [Begoniaceae]; <i>Futsa</i> ; Rongsen 2176	Herb	Whole plant	Diarrhoea, stomachache, fever.
<i>Begonia picta</i> Smith [Begoniaceae]; <i>Futsa</i> ; Rongsen 1795	Herb	Leaf	Tongue blister and mouth ulcer.
<i>Berberis aristata</i> DC. [Berberidaceae]; <i>Merimejpsang</i> ; Rongsen 0356	Shrub	Fruit	Conjunctivitis, erysipelas, jaundice, hemorrhoids, menorrhagia, ulcerative conditions and urinogenital disorder.
<i>Betula alnoides</i> Buchanan-Hamilton ex D. Don [Betulaceae]; <i>Pingkisang</i> ; Rongsen 1563	Tree	Bark	Fresh bark is chewed to improve digestion; infusion is used during body-ache and fever.
<i>Bidens biternata</i> Merrill & Sherff [Asteraceae]; <i>Kyorav</i> ; Rongsen 0392	Herb	Aerial parts	Aerial part is boiled and taken orally for diarrhoea and dysentery.
<i>Bidens pilosa</i> Linnaeus [Asteraceae]; <i>Chuhro</i> ; Rongsen 2154	Herb	Aerial parts	Leprosy, skin diseases. Seeds are anthelmintic and diuretic.
<i>Boenninghausenia albiflora</i> Reichenbach ex Meisner [Rutaceae]; Rongsen 1600	Herb	Whole plant	Rheumatism, sprains, chicken-pox, anti-bacterial and anti-fungal

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Brassaiopsis glomerata</i> (Blume) Regel [Araliaceae]; <i>Chuisang</i> ; Rongsen 1742	Shrub	Bark	Bark paste is applied to treat bone fracture and sprain.
<i>Buddleja asiatica</i> Loureiro [Buddlejaceae]; <i>Chirid</i> ; Rongsen 0391	Shrub	Leaf	Leaf paste is applied on skin diseases and bacterial infections.
<i>Calamus leptospadix</i> Griffith [Arecaceae]; <i>Turi</i> ; Rongsen 0355	Shrub	Fruit	Seeds used in indigestion and stomach disorder.
<i>Campylandra wattii</i> Baker [Liliaceae]; <i>Sangshisangjing</i> ; Rongsen 1735	Herb	Leaf, fruit	Malaria and dysentery. Fruit used to treat heart diseases.
<i>Campylandra aurantiaca</i> Baker [Liliaceae]; <i>Sangshisangjing</i> ; Rongsen 1581	Herb	Fruit	Psychological disorders.
<i>Callicarpa rubella</i> Lindley [Verbenaceae]; <i>Aziinükjang tong</i> ; Rongsen 1759	Shrub	Bark, root	Diuretic, used in treatment of tumours.
<i>Cephalotaxus griffithii</i> Hooker f. [Cephalotaxaceae]; <i>Kelingsang</i> ; Rongsen 0308	Tree	Whole plant	Cephalotaxine extract of the plant is used as anti-tumour.
<i>Chaerophyllum villosum</i> Wallich ex DC. [Apiaceae]; <i>Pangpanglan</i> ; Rongsen 1733	Herb	Root	Dried root powder mixed with <i>Ginseng</i> roots is taken orally for sexual stimulation.
<i>Chloranthus brachystachys</i> Blume [Chloranthaceae]; <i>Ongchinaro</i> ; Rongsen 0359	Herb	Root	The root infusion is use as remedy for spasms in pregnant women, treatment of small-pox.
<i>Cinnamomum tamala</i> Nees & Ebermaier [Lauraceae]; <i>Sangchisang</i> ; Rongsen 1533	Tree	Leaf, bark	Anthelmintic, carminative, cardio tonic, diuretic. Used in anorexia, bladder disorder, dryness of mouth, colic, diarrhoea, hemorrhoids.
<i>Cinnamomum zeylanicum</i> Blume [Lauraceae]; <i>Sangchisang</i> ; Rongsen 2107	Tree	Bark	Carminative, stomachic, oil as flavouring agent, preservative, condiment. Powdered bark smoked to treat asthma, cough and tuberculosis.
<i>Cissampelos pareira</i> Linnaeus [Minespermaceae]; Rongsen 0328	Climber	Leaf, root	Abdominal pain, cystitis, dropsy, fever, heart diseases, internal rupture, respiratory disorders, skin diseases.
<i>Clematis buchananiana</i> DC. [Ranunculaceae]; <i>Shipak</i> ; Rongsen 1790	Climber	Root, shoot	Used for stomachache, tumors, skin diseases and body sores.
<i>Colocasia esculenta</i> (Linnaeus) Schott [Araceae]; <i>Manü</i> ; Rongsen 0378	Herb	Whole plant	Bee sting, cuts, burns and injuries; haemostatic, laxative, demulcent. Leaves styptic, stimulant, gastritis.
<i>Commelina benghalensis</i> Linnaeus [Commelinaceae]; <i>Phetsowo</i> ; Rongsen 1774	Herb	Leaf	Boils, burns, cough, muscular pain, tonsillitis, leprosy, sores and snake bites, emollient, refrigerant, laxative.
<i>Commelina paludosa</i> Blume [Commelinaceae]; <i>Jerakrak</i> ; Rongsen 2149	Herb	Whole plant	Whole plant is diuretic and is used in depression.
<i>Curculigo capitulata</i> (Loureiro) O. Kuntze [Hypoxidaceae]; <i>Piyaknok</i> ; Rongsen 2159	Herb	Root	Poultices, haemostatic and as antiseptics. Extract is applied to treat conjunctivitis and ear ache.
<i>Cuscuta reflexa</i> Roxburgh [Cuscutaceae]; <i>Tsulali</i> ; Rongsen 0357	Climber	Whole plant	Haemostatic, juice extract for blood pressure.
<i>Cyclea peltata</i> Hooker f. & Th. [Minespermaceae]; Rongsen 0384	Climber	Bark	Bark paste applied to cure headache and in sprains.



PLATE - I: Fig. A. *Lyonia ovalifolia* (Wallich) Drude; Fig. B. *Hypericum hookerianum* Wight & Arnott; Fig. C. *Dendrobium nobile* Lindley Fig. D. *Swertia bimaculata* Hooker f. & Thomson; Fig. E. *Campylandra wattii* Baker Fig. F. *Toddalia asiatica* (Linnaeus) Lamrck

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Cyperus rotundus</i> Linnaeus [Cyperaceae]; <i>Yatsur</i> ; Rongsen 0110	Herb	Whole plant	Anorexia, cough, diarrhoea, fever and haemophilic conditions. Antipyretic, demulcent, anthelmintic, diaphoretic, diuretic, emmenagogue, stimulant.
<i>Cynodon dactylon</i> (Linnaeus) Pers.[Poaceae]; <i>Phiechu</i> ; Rongsen 0101	Herb	Whole plant	Epitasis, scabies, haemostatic, genito-urinary disorders, fever, dysentery, dropsy, piles, epilepsy and hysteria.
<i>Delphinium altissimum</i> Wallich [Ranunculaceae]; Rongsen 0363	Herb	Rhizome	Rhizome used in cuts, wounds and rheumatism.
<i>Debregeasia longifolia</i> Weddell [Urticaceae]; <i>Melibo</i> ; Rongsen 0310	Shrub	Fruit	Fruits used as digestive.
<i>Dendrobium densiflorum</i> Wallich ex Lindley [Orchidaceae]; <i>Sangpenlangpen</i> ; Rongsen 1785	Herb	Leaf, seed	Leaf paste is plastered on fractured bone. Powdery seeds haemostatic.
<i>Dendrobium nobile</i> Lindley [Orchidaceae]; <i>Tse</i> ; Rongsen 2137	Herb	Seed, stem	Seed powder haemostatic. Used during fever of convalescence.
<i>Dicentra scandens</i> (D. Don) Walpers [Fumariaceae]; Rongsen 2138	Herb	Tuber	Blood pressure and antidiabetic menstrual pain, stomach trouble.
<i>Dichroa febrifuga</i> Loureiro [Hydrangeaceae]; Rongsen 2127	Herb	Leaf, root	Roots and leaves extracts are used in malarial fever and rheumatism.
<i>Dioscorea bulbifera</i> Linnaeus [Dioscoreaceae]; <i>Pokmaso</i> ; Rongsen 2153	Climber	Tuber, bulbil	Diuretic, anthelmintic, used for jaundice, diabetes, and headache.
<i>Dioscorea pentaphylla</i> Linnaeus [Dioscoreaceae]; <i>Kakuli</i> ; Rongsen 1796	Climber	Tuber, bulbil	Paste applied in swellings and used as general tonic.
<i>Diospyros kaki</i> Linnaeus [Ebenaceae]; <i>Pipakinsang</i> ; Rongsen 2122	Tree	Fruit	Used in the treatment of cough and dyspepsia.
<i>Diplazium esculentum</i> (Retzius) Sweet [Athyriaceae]; <i>Letsi</i> ; Rongsen 0133	Herb	Leaf	Boiled frond used to for constipation and diabetes.
<i>Diplazium polypodiades</i> Blume [Athyriaceae]; <i>Liphaki</i> ; Rongsen 0135	Herb	Whole plant	Decoction of whole plant used to treat diabetes.
<i>Drymaria cordata</i> (Linnaeus) Willdenow [Caryophyllaceae]; <i>Piptsu</i> ; Rongsen 2152	Herb	Whole plant	Skin diseases, ringworm, fever, asthma, sinusitis and dysentery. Juice laxative and antifebrile.
<i>Drynaria quercifolia</i> (Linnaeus) Smith [Drynariaceae]; <i>Janger</i> ; Rongsen 0136	Herb	Whole plant	Typhoid fever, swelling, skin diseases, astringent, tonic.
<i>Duchesnea indica</i> (Anderson) Focke [Rosaceae]; <i>Laklaksübakang</i> ; Rongsen 0320	Herb	Whole plant, Fruit	Decoction of plant is used to treat stones in the urinary tract and kidney. Fruit used as tonic for liver.
<i>Elaeagnus pyriformis</i> Hooker f. [Elaeagnaceae]; <i>Merimejepki</i> ; Rongsen 1576	Shrub	Seed	The seed are used as stimulant in cough.
<i>Elaeagnus parviflora</i> Wallich ex Royle [Elaeagnaceae]; <i>Kotarangjang</i> ; Rongsen 0389	Shrub	Fruit, flower	Seed stimulant and seed oil is used in pulmonary affections. Flowers cardiac and astringent.
<i>Elaeocarpus sphaericus</i> (Gaertner) K. Schumacher [Elaeocarpaceae]; <i>Sungamerem</i> ; Rongsen 0341	Tree	Fruit	The fruit is used for epilepsy.
<i>Elsholtzia blanda</i> Benthham [Lamiaceae]; <i>Arem napa</i> ; Rongsen 2183	Herb	Whole plant	Cuts, wounds, sores, bee sting, skin diseases, kidney and urinary trouble, choleric diarrhea, carminative, tonic.
<i>Equisetum ramosissimum</i> Desfontaines [Equisetaceae]; <i>Suhe</i> ; Rongsen 0130	Herb	Whole plant	Decoction of the plant is used in treatment of gonorrhoea, rheumatic and arthritic problems.

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Eupatorium adenophorum</i> Sprengel [Asteraceae]; <i>Burmaka</i> ; Rongsen 0361	Herb	Leaf	Haemostatic. Leaves used in malaria, stomachache and as insecticide.
<i>Fagopyrum cymosum</i> (Treviranus) Meisner [Polygonaceae]; <i>Lomfoli</i> ; Rongsen 1757	Herb	Whole plant	Used for stomach trouble, intestinal worms and diuretic.
<i>Fragaria nilgerrensis</i> Schlechtendal ex J. Gay [Rosaceae]; <i>Tsulapolong</i> ; Rongsen 1506	Herb	Aerial parts	Eyes ailments, treatment of urinary and kidney stones.
<i>Galinsoga parviflora</i> Cavan [Asteraceae]; <i>Bommara</i> ; Rongsen 1786	Herb	Leaf, root	Leaf extract used in dysentery and boils. Roots used as tonic.
<i>Gaultheria griffithiana</i> Wight [Ericaceae]; <i>Longpentsaksang</i> ; Rongsen 1544	Shrub	Leaf	Rheumatism, neuralgia, stimulant, carminative, antiseptic, wormicides.
<i>Gaultheria fragrantissima</i> Wallich [Ericaceae]; <i>Longpentsaksang</i> ; Rongsen 1705	Shrub	Leaf, Fruit	Headache, analgesic, astringent, diuretic; oil anti-rheumatism, stimulant, carminative, antiseptic.
<i>Geranium nepalense</i> Sweet [Geraniaceae]; <i>Nilingken</i> ; Rongsen 1583	Herb	Whole plant	Diuretic and astringent. It is used to treat renal disease.
<i>Gonatanthus pumilus</i> (D. Don) Engler & K. Krause [Araceae]; <i>Sangshipni</i> ; Rongsen 0321	Herb	Whole plant	Aperients and tonic. Used to treat burns, bone fracture and sprains. Whole plant maggoticides.
<i>Gynura cusinbua</i> (D. Don) Moore [Asteraceae]; <i>Yiatsuyi</i> ; Rongsen 1582	Herb	Leaf	Leaf juice haemostatic, used in constipation stomach disorder and headache.
<i>Hedera nepalensis</i> K. Koch [Araliaceae]; <i>Duddela</i> ; Rongsen 1573	Climber	Leaf, fruit	Leaves used to kill lice. Stimulant, cathartic, diaphoretic; contraceptive.
<i>Hedychium coronarium</i> Koenig [Zingiberaceae]; <i>Moroknaro</i> ; Rongsen 1780	Herb	Rhizome	Carminative and stimulant. It is taken in cough, fever and dizziness. Paste is applied to bruises and sprain.
<i>Hedychium spicatum</i> Buchanan-Hamilton ex Smith [Zingiberaceae]; <i>Pfhesei</i> ; Rongsen 1797	Herb	Rhizome	Cough, asthma, nausea, vomiting, inflammation and pains. Carminative, stimulant and tonic.
<i>Hedyotis scandens</i> Roxburgh [Rubiaceae]; Rongsen 1701	Climber	Leaf, root	Eye diseases, complications after birth, boils and sprains.
<i>Herpetospermum pedunculatum</i> (Seringe) C. B. Clarke [Cucurbitaceae]; <i>Wangkusu</i> ; Rongsen 1578	Climber	Leaf	Decoction is taken for the treatment of malaria and as liver tonic.
<i>Holbelia latifolia</i> Wallich [Lardizabalaceae]; <i>Sungzujang</i> ; Rongsen 1738	Climber	Fruit	Used to cure stomach ailments. Crushed leaves are applied on burns.
<i>Hydrocotyle javanica</i> Thunberg [Apiaceae]; Rongsen 0362	Herb	Whole plant	Gastric troubles, dysentery and fever. It has insecticidal properties.
<i>Hypericum elodeoides</i> Choisy [Hypericaceae]; <i>Memosangto</i> ; Rongsen 1800	Herb	Whole plant	Used as antiviral during fever.
<i>Hypericum hookerianum</i> Wight. & Arnott [Hypericaceae]; <i>Memosangto</i> ; Rongsen 1597	Shrub	Whole plant	Conjunctivitis, dysentery, skin diseases, astringent, maggoticide.
<i>Illicium griffithii</i> Hooker f. & Thomson [Illiciaceae]; <i>Sangsongsang</i> ; Rongsen 1520	Tree	Fruit	Fruit used as tonic and spice.
<i>Imperata cylindrica</i> Linnaeus [Poaceae]; <i>Meshu</i> ; Rongsen 0102	Herb	Root	Dysentery, diarrhea, anthelmintic and ophthalmic, wormicide.



PLATE - II: **Fig. G.** *Rhododendron arboreum* ssp. *delavayi* (Franchlet) Chamberlain; **Fig. H.** *Vanda coerulea* Griffith ex Lindley; **Fig. I.** *Paris polyphylla* Smith var. *polyphylla*; **Fig. J.** *P. polyphylla* var. *wallichii* Hara; **Fig. K.** *P. polyphylla* var. *fargesii* (Franchlet) S.

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Juglans regia</i> Linnaeus [Juglandaceae]; <i>Tekosiing</i> ; Rongsen 0278	Tree	Leaf, fruit	Fruit used in rheumatism, tonic. Leaves and bark anthelmintic.
<i>Leucosceptrum canum</i> Smith [Lamiaceae]; <i>Pinkim</i> ; Rongsen 0366	Shrub	Leaf, inflor.	Haemostatic. Inflorescence is taken as astringent, stimulant and tonic.
<i>Lycopodium clavatum</i> Linnaeus [Lycopodiaceae]; <i>Mangrangnaro</i> ; Rongsen 0129	Herb	Whole plant	Dyspepsia, constipation, hepatic congestion, pustular skin eruption, rheumatism, cramps and varices.
<i>Litsea citrata</i> Blume [Lauraceae]; <i>Ningtrong sang</i> ; Rongsen 1776	Tree	Bark, leaf, fruit	Dysentery, diarrhoea. Carminative, expectorant, stimulant, poultice and insecticide. Fruits as spices.
<i>Lyonia ovalifolia</i> (Wallich) Drude [Ericaceae]; Rongsen 1730	Tree	Leaf	Leaves used in skin diseases and have insecticidal properties.
<i>Mahonia nepalensis</i> D. Don [Berberidaceae]; <i>Sesakin</i> ; Rongsen 1778	Shrub	Bark, fruit	Used in dysentery, eye diseases and toothache.
<i>Melia composita</i> Willdenow [Meliaceae]; <i>Khute</i> ; Rongsen 1596	Tree	Leaf, fruit	Anthelmintic, astringent, stomachic; skin diseases and as insect repellent.
<i>Morus alba</i> Linnaeus [Moraceae]; <i>Kakuithi</i> ; Rongsen 0342	Tree	Leaf, fruit	Diaphoretic and emollient, haemostatic; laxative, febrifuge.
<i>Mussaenda macrophylla</i> Wallich [Rubiaceae]; <i>Awathsu</i> ; Rongsen 1702	Shrub	Leaf	Haemostatic, aqueous extract of the plant is used to cure mouth ulcer and as appetizer.
<i>Mussaunda roxburghii</i> Hooker f. [Rubiaceae]; <i>Noksangjipen</i> ; Rongsen 1704	Shrub	Leaf	Haemostatic.
<i>Myrica esculenta</i> Hamilton ex D. Don [Myricaceae]; <i>Metiyong</i> ; Rongsen 0345	Tree	Fruit, bark	Indigestion and to prepare refreshing drink. Bark is used in asthma, affliction in lungs and bronchitis.
<i>Oenanthe stolonifera</i> Wallich [Apiaceae]; <i>Panpangla</i> ; Rongsen 2180	Herb		Whole plant for diabetes.
<i>Oxalis corniculata</i> Linnaeus [Oxalidaceae]; <i>Fenonotsubo</i> ; Rongsen 1781	Herb	Aerial parts	Antidysentery. Leaves are used against toothache.
<i>Paedaria foetida</i> Linnaeus [Rubiaceae]; <i>Sunemli</i> ; Rongsen 1789	Climber	Leaf	Used against dysentery, diarrhea and stomach disorder.
<i>Panax pseudo-ginseng</i> Wallich [Araliaceae]; <i>Yongka</i> ; Rongsen 1714	Herb	Tuber	Tonic, anti-hypertension, heart problems, anti-diabetes, anti-cancer, ulcers, tuberculosis, aphrodisiac.
<i>Panax assamicus</i> R. N. Banerjee [Araliaceae]; <i>Yongka</i> ; Rongsen 0351	Herb	Root	Aphrodisiac, stimulant, tonic, amnesia, ulcers, headache, convulsion, heart problems, diabetes, cancer, tuberculosis, neurasthenia, dyspepsia.
<i>Paris polyphylla</i> Smith var. <i>polyphylla</i> [Trilliaceae]; <i>Shingko</i> ; Rongsen 1783	Herb	Root	Analgesic, antiphlogistic, antitussive, antispasmodic, depurative, narcotic, antidote, tonic, antibacterial action.
<i>Paris polyphylla</i> var. <i>wallichii</i> Hara [Trilliaceae]; <i>Shingko</i> ; Rongsen 1580	Herb	Root	Diarrhea, antidote against insect and snakebite. Stimulant, anticancer properties.
<i>Paris polyphylla</i> var. <i>fargesii</i> (Franchet) S. Dasgupta [Trilliaceae]; <i>Shingko</i> ; Rongsen 0396	Herb	Root	Decoction is used in the treatment of poisonous snake bites, boils and ulcers, diphtheria, sedative.
<i>Pericampylos glaucus</i> (Lamarck) Merrill [Menispermaceae]; Rongsen 1524	Climber	Aerial parts	Paste is applied in bone fracture, and burns.
<i>Pholidota imbricata</i> (Roxburgh) Lindley [Orchidaceae]; Rongsen 2158	Herb	Whole plant	The plant decoction is drunk as a tonic for various ailments.

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Phyllanthus glaucus</i> Wallich ex Mueller -Argoviensis [Euphorbiaceae]; Rongsen 1521	Shrub	Whole plant	Carminative, diuretic, febrifuge and styptic. Used in anaemia, anorexia, cough, dyspepsia, gout, skin diseases.
<i>Piper longum</i> Linnaeus [Piperaceae]; <i>Sangshing</i> ; Rongsen 1731	Creeper	Fruit	Stomachic, aphrodisiac, alternative, laxative, anti diarrheic, antiallergies.
<i>Piptanthus nepalensis</i> (Hooker) D.Don [Fabaceae]; Rongsen 1574	Shrub	Aerial parts	Decoction of plants used in dysentery and paste as insect repellent.
<i>Plantago major</i> Linnaeus [Plantageniaceae]; <i>Lemkimao</i> ; Rongsen 2124	Herb	Leaf	Leaf paste applied on cuts and wounds.
<i>Polygonum capitatum</i> Buchanan-Hamilton [Polygonaceae]; <i>Psuzie</i> ; Rongsen 2178	Herb	Leaf, flower	Rheumatism; haemostatic and is used on wounds and insect bites.
<i>Polygonum chinense</i> Linnaeus [Polygonaceae]; <i>Aulangpang</i> ; Rongsen 1708	Herb	Aerial parts	Bronchitis, jaundice, diarrhoea, dysentery, enteritis, skin diseases, astringent, diuretic, haemostatic.
<i>Polygonum hydropiper</i> Linnaeus [Polygonaceae]; <i>Echuimshi</i> ; Rongsen 0326	Herb	Whole plant	Stimulant, anthelmintic, diuretic, carminative and emmenagogue, contraceptive.
<i>Polygonum molle</i> D. Don [Polygonaceae]; <i>Psuzie</i> ; Rongsen 1755	Herb	Aerial parts	Decoction of plant used in urination. Plant paste in stomach disorder.
<i>Potentilla fulgens</i> Wallich ex Hooker [Rosaceae]; <i>Lalipen</i> ; Rongsen 1551	Herb	Whole plant	Crushed roots applied in toothache. Plant is spasmolytic, antidiarrhea and anti-cancer.
<i>Pothos cathartii</i> Schott [Araceae]; <i>Taktakvi</i> ; Rongsen 1504	Herb	Whole plant	Haemostatic, burns.
<i>Pouzolzia viminea</i> Weddell [Urticaceae]; <i>Nenitongsang</i> ; Rongsen 1511	Herb	Leaf	Fever, allergy, itches, cuts and wounds.
<i>Pteris biaurita</i> Linnaeus [Pteridaceae]; <i>Janger</i> ; Rongsen 0134	Herb	Shoot	Paste of tender shoot applied on wound.
<i>Pteris insiformis</i> Burman f. [Pteridaceae]; <i>Janger</i> ; Rongsen 0128	Herb	Root, leaf	Rhizome applied on glandular swelling of neck. Leaf for dysentery.
<i>Phytolacca acinosa</i> Roxburgh [Phytolaccaceae]; Rongsen 0367	Herb	Leaf	Rheumatism.
<i>Ranunculus diffusus</i> DC. [Ranunculaceae]; Rongsen 0364	Herb	Aerial parts	Shoots and leaves decoction is used in bruises and wounds.
<i>Ranunculus scleratus</i> Linnaeus (Ranunculaceae); Rongsen 2181	Herb	Aerial parts	Used on blisters and wounds.
<i>Rhamnus nepalensis</i> Wallich ex Milaws [Rhamnaceae]; Rongsen 2116	Shrub	Fruit	Pounded fruit are macerated in vinegar and used in herpes.
<i>Rhododendron arboreum</i> ssp. <i>delavayi</i> (Franchet) Chamberlain [Ericaceae]; <i>Metapen/Topen</i> ; Rongsen 1529	Tree	Flower	Used for infantile diarrhoea, dysentery, spasmolytic, depressant, anticancer and hypotensive.
<i>Rhus semialata</i> Murray [Anacardiaceae]; <i>Tanmo</i> ; Rongsen 1730	Tree	Fruit	Indigestion, food poisoning and stomach ache, allergies.
<i>Rhus succedanea</i> Linnaeus [Anacardiaceae]; <i>Jarak</i> ; Rongsen 1558	Tree	Leaf, fruit	Rashes and skin diseases, antiviral, antiamebic, hypotensive; diuretic.
<i>Rosa clinophylla</i> Thory [Rosaceae]; <i>Kolap</i> ; Rongsen 0319	Shrub	Flower	Oil for perfumes and cosmetics.
<i>Roscoea purpurea</i> Smith [Zingiberaceae]; Rongsen 2147	Herb	Rhizome	Used in the treatment of malaria.
<i>Rubia cordifolia</i> Linnaeus [Rubiaceae]; <i>Sangshap</i> ; Rongsen 0365	Herb	Root, leaf	Ring worm, leucodermal patches, rhinosinal infection, skin diseases; tonic, antidyentery and antiseptic.

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Rubia sikkimensis</i> Kurz [Rubiaceae]; <i>Awali</i> ; Rongsen 2182	Herb	Root	Root paste applied in snake bite as antidote.
<i>Rubus ellipticus</i> Smith [Rosaceae]; <i>Sosaneseikin</i> ; Rongsen 1777	Shrub	Root, shoot	Fever, stomach ache, hepatitis and kidney troubles.
<i>Rubus rosaefolius</i> Smith [Rosaceae]; <i>Kofakin</i> ; Rongsen 1585	Shrub	Root	Decoction of the root used in fever and malaria.
<i>Rubus moluccanus</i> Linnaeus [Rosaceae]; <i>Pinakin</i> ; Rongsen 1593	Shrub	Leaf	Diarrhea and stomach disorder. Leaf paste applied on body swelling.
<i>Rumex nepalensis</i> Sprengel [Polygonaceae]; <i>Furonniki</i> ; Rongsen 1541	Herb	Root, leaf	Boils and body swelling. Root extract used in hepatitis and as depressant.
<i>Satyrium nepalense</i> D. Don [Orchidaceae]; Rongsen 1764	Herb	Tuber	Used to treat malaria, dysentery and as general tonic.
<i>Saurauria nepaulensis</i> DC. [Saurauiaceae]; <i>Ajjila</i> ; Rongsen 1722	Tree	Leaf	Depressant and spasmolytic.
<i>Schima khasiana</i> Dyer [Theaceae]; <i>Mimusosing</i> ; Rongsen 1527	Tree	Leaf	Antipyretic, haemostatic. Bark irritant.
<i>Schima wallichii</i> (DC.) Korthals [Theaceae]; <i>Mimusosing</i> ; Rongsen 2161	Tree	Bark, leaf	Leaf paste haemostatic. Decoction used to cure flatulence. Bark anthelmintic, rubefacient.
<i>Seigesbeckia orientalis</i> Linnaeus [Asteraceae]; <i>Kumenau</i> ; Rongsen 1732	Herb	Leaf	Antiseptic properties and is externally applied to sores and as febrifuge.
<i>Senecio cappa</i> D. Don [Asteraceae]; <i>Mesakraza</i> ; Rongsen 0375	Shrub	Leaf	Skin diseases and boils, used as insecticide.
<i>Senecio scandens</i> Hooker f. [Asteraceae]; <i>Mesakraza</i> ; Rongsen 2173	Herb	Leaf	Leaves emetic, used in jaundice and for eye trouble.
<i>Sida rhombifolia</i> Linnaeus [Malvaceae]; Rongsen 1782	Herb	Root	Fever, sores, cough. rheumatism, leucoderma, menorrhagia, boils.
<i>Smilax aspera</i> Linnaeus [Smilacaceae]; <i>Mangkokangli</i> ; Rongsen 2179	Herb	Root, leaf	Diuretic, diaphoretic and rheumatic- arthritis.
<i>Smilax glabra</i> Roxburgh [Smilicaceae]; <i>Mangkokangli</i> ; Rongsen 0379	Herb	Leaf	Leaf is used against venereal diseases and skin rashes.
<i>Smilax ovalifolia</i> Roxburgh [Smilicaceae]; <i>Fupro</i> ; Rongsen 1734	Herb	Aerial parts	Venereal diseases, sores, rheumatic pain, dysentery, urinary complaints.
<i>Solanum khasianum</i> Clarke [Solanaceae]; <i>Kamonglüzuh</i> ; Rongsen 2125	Herb	Fruit	Tooth decay and toothache.
<i>Solanum nigrum</i> Roxburgh [Solanaceae]; <i>Leptongnevo</i> ; Rongsen 0311	Herb	Whole plant	Skin diseases, oedema, cough, malaria, blood pressure, diuretic.
<i>Sonchus arvensis</i> Nees [Asteraceae]; <i>Yasen</i> ; Rongsen 0395	Herb	Root, leaf	Cough, bronchitis, jaundice, vomiting, diuretic, skin swelling.
<i>Spilanthus acmella</i> Linnaeus [Asteraceae]; <i>Kohduh</i> ; Rongsen 1792	Herb	Whole plant	Toothache and dysentery.
<i>Stellaria wallichiana</i> Bentham ex Haines [Caryophyllaceae]; Rongsen 2103	Herb	Aerial part	Anthelmintic and anti inflammatory.
<i>Stephania elegans</i> Hooker f. & Thomson [Menispermaceae]; <i>Jangrou</i> ; Rongsen 1522	Climber	Tuber	Eye injuries and skin diseases, also for asthma.
<i>Swertia bimaculata</i> Hooker f. & Thomson [Gentianaceae]; <i>Weyangsangpen</i> ; Rongsen 1577	Herb	whole plant	Malarial fever, nausea, laxative, anti- diarrhea, weak digestion, urinary troubles, measles and skin diseases.

Name [Family]; Local Name; Exsicattae	Habit	Part/s Used	Medicinal uses
<i>Symplocos racemosa</i> Roxburgh [Symplocaceae]; Rongsen 2126	Tree	Bark	Dysentery, hemorrhage, ophthalmia, liver problems, uterine disorder.
<i>Taxus wallichiana</i> Zuccarini [Taxaceae]; <i>Merinuhu</i> ; Rongsen 1554	Tree	Bark, leaf	Bronchitis, epilepsy, headache, giddiness. Antiseptic, aphrodisiac, emmenagogue, sedative, anticancer.
<i>Thalictrum foliolosum</i> DC. [Ranunculaceae]; <i>Metsubi</i> ; Rongsen 1725	Herb	Root	Malarial fever, eye diseases, diuretic, purgative and bitter tonic during convalescence and dyspepsia.
<i>Toddalia asiatica</i> (Linnaeus) Lamarck [Rutaceae]; <i>Liuso/Lapuk</i> ; Rongsen 1760	Shrub	Root	Roots are used to regulate amenorrhea and menstrual disorder.
<i>Toona ciliata</i> M. J. Roemer [Meliaceae]; <i>Sai</i> ; Rongsen 0358	Tree	Bark, flower	Chronic dysentery, anti-periodic, astringent, tonic; emmenagogue.
<i>Trichosanthes tricuspidata</i> Loureiro [Cucurbitaceae]; <i>Dzoru</i> ; Rongsen 2177	Climber	Leaf, fruit	Carminative, emetic and purgative. Used on burns, epilepsy and leprosy, sores.
<i>Urtica dioica</i> Linnaeus [Urticaceae]; <i>Kimbo</i> ; Rongsen 1779	Herb	Leaf	Antiviral.
<i>Urtica parviflora</i> Roxburgh [Urticaceae]; <i>Kimbo</i> ; Rongsen 1711	Herb	Root, leaf	Diarrhoea, constipation, toothache, hepatitis, fever, blood purifier.
<i>Valeriana wallichii</i> DC. [Valerianaceae]; <i>Lomfoli</i> ; Rongsen 2119	Herb	Whole plant	Colic, epilepsy, fever, hysteria, liver disorder, skin and eye diseases.
<i>Valeriana hardwickii</i> Wallich [Valerianaceae]; <i>Lomfoli</i> ; Rongsen 1535	Herb	Root	Sedative, tranquillizer in hysteria, nervous disorder, skin diseases, scorpion sting and urinary troubles.
<i>Vanda coerulea</i> Griffith ex Lindley [Orchidaceae]; <i>Nelichipam</i> ; Rongsen 0385	Herb	Seed	Seeds used in cuts, injuries and fire burn.
<i>Verbena officinalis</i> Linnaeus [Verbenaceae]; Rongsen 2157	Herb	Leaf, seed	Fever, sores, sedative; rheumatism, dropsy, stomachic, liver disorder.
<i>Viola betonicifolia</i> Smith [Violaceae]; <i>Shobrak</i> ; Rongsen 2121	Herb	Aerial parts	Plant paste applied to ulcers and sores.
<i>Viola pilosa</i> Blume [Violaceae]; <i>Shobrak</i> ; Rongsen 1584	Herb	Aerial parts	Cough, ulcer, constipation, throat cancer, skin diseases, febrifuge.
<i>Viscum articulatum</i> Burman [Viscaceae]; <i>Teretmozutong</i> ; Rongsen 1793	Herb	Whole plant	Paste of the plant applied to cure bone fracture and bruises.
<i>Wendlandia glabrata</i> DC. [Rubiaceae]; Rongsen 1726	Tree	Bark, shoot	Urinary complaints, cough, dysentery.
<i>Zanthoxylum acanthopodium</i> DC. [Rutaceae]; <i>Metsa ashi</i> ; Rongsen 0376	Tree	Leaf, Fruit	Febrifuge and poultice. Paste of the fruits is applied to tooth-ache. Fruits as condiment.
<i>Zanthoxylum khasianum</i> Hooker f. [Rutaceae]; <i>Kotashishikit</i> ; Rongsen 1591	Tree	Fruit	Toothache and stomach disorder.
<i>Zanthoxylum armatum</i> DC. [Rutaceae]; <i>Ayangau</i> ; Rongsen 2151	Tree	Leaf, fruit, seed	Diarrhea, fever, cough, asthma, paralysis, gout, toothache, indigestion, skin diseases, diabetes.

The tribals in rural areas are solely dependent on the forest resources for their health care and treatment of various ailments. Many of the plants are used in traditional medicinal purposes and some are also use as vegetables and fruits.

Some of these plants are cultivated in kitchen gardens and in jhum fields, but about 80 % of medicinal plant requirements are met through wild collection by the community. The native

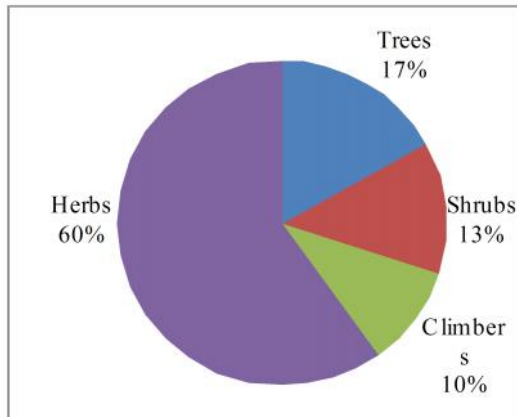


Fig.2. Habit wise distribution of medicinal plants

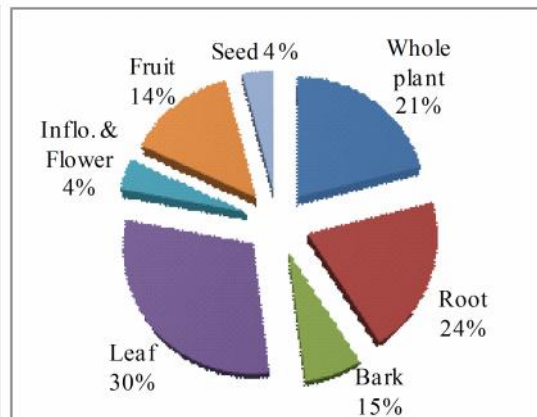


Fig.3. Analysis of medicinal plants by their parts utilized

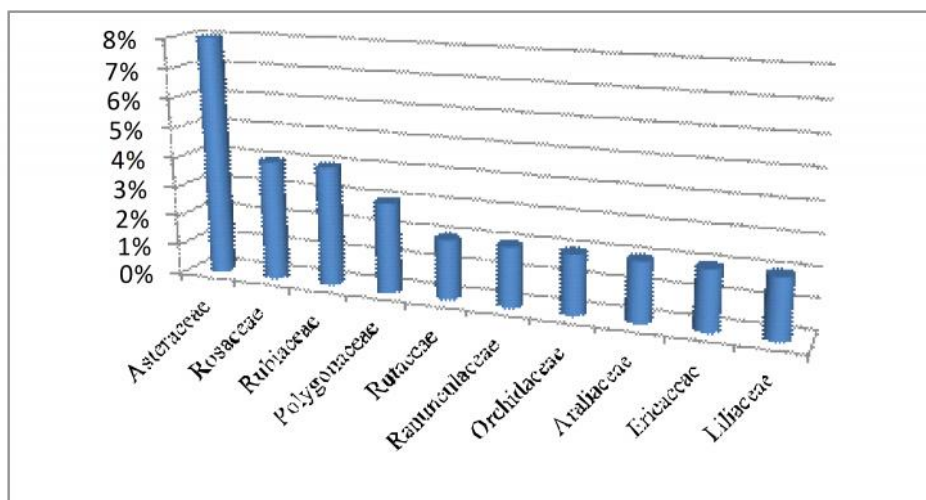


Fig.4. Percentage distribution of ten dominant families

tribal people ensure the availability of plant resources for future use and their traditional utilization reflects the management of natural ecosystem. However, with the recent increase in the demand of pharmaceutical raw materials and awareness of the presence of some rare medicinal plant species, commercial establishments have come up in the state for trading these items. These leads to indiscriminate large scale collection of plant resources from natural habitat and is causing extensive destruction of the natural resources and many valuable species have become rare and endangered which were earlier abundantly available in the state. The conservation and sustainable utilization of medicinal plants is an urgent need for which the assessment of the diversity of medicinal plant of the region is a pre-requisite.

CONCLUSION

From the study conducted, it is found that 26 % of medicinal plants of the state are represented in the FWS. It is evident from the present investigation that the Yimchunger community has great relationship with the plants of their environment as they mostly dependent on forest resources for their various needs. However, nearby the periphery of the sanctuary, various

Table 2. List of priority medicinal plants of Fakim wildlife sanctuary

Plant Name	Status	Market value	Remarks
<i>Balanophora dioica</i>	Rare and endangered	–	Endangered due to habitat destruction
<i>Cephalotaxus griffithii</i>	Threatened	+	Ornamental, easily cultivable
<i>Cinnamomum</i> spp.	Threatened	+	Spice and condiments, high demand, easily cultivable
<i>Gaultheria griffithiana</i>	Abundant	+	Cultivable
<i>Illicium griffithii</i>	Endangered	+	Condiments, cultivable
<i>Panax pseudo-ginseng</i>	Rare	+	High demand, over exploited, need conservation
<i>Paris polyphylla</i>	Endangered	+	High demand, over exploited, need conservation
<i>Rhododendron arboreum</i>	Threatened	–	Ornamental, need conservation
<i>Rubia</i> spp.	Vulnerable	–	Weeds, easily cultivable
<i>Taxus wallichiana</i>	Rare and endangered	+	High demand, cultivable, need conservation
<i>Valeriana wallichii</i>	Vulnerable	+	High demand, cultivable
<i>Vanda coerulea</i>	Rare and endangered	+	Ornamental, easily cultivable
<i>Zanthoxylum acanthopodium</i>	Abundant	+	Vegetable and condiments, easily cultivable.

activities such as the age old practice of Slash and Burn method of cultivation, forest fire, over exploitation of plant resources, logging, hunting of animals and other socio-economic developmental activities have lead to the depletion of surrounding forest wealth of the sanctuary at alarming rate which are the main threats not only to the biological diversity of the sanctuary. Therefore, effective measures need to be urgently implemented to preserve and protect the peripheral forests which harbour valuable wealth and also rich in bioresources.

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