

**DISTRIBUTION AND CONSERVATION OF MEDICINAL PLANTS IN,
KOHIMA MOKOKCHUNG, TUENSENG AND ZUNHEBOTO
DISTRICTS OF NAGALAND**

Rama Shankar^{1*}, A. K. Tripathi², Shazia Neyaz³, Gyati Anku⁴

¹National Vrکشayurveda Research Institute, Gwalior Road, Jhansi-284003.

²Central Council for Research in Ayurvedic Sciences, New Delhi-110058.

^{3,4}Ayurveda Regional Research Institute Itanagar, Arunachal Pradesh, India- 791111.

Article Received on
05 Jan 2016,

Revised on 28 Jan 2016,
Accepted on 19 Feb 2016

***Correspondence for
Author**

Prof. Dr. Rama Shankar
National Vrکشayurveda
Research Institute,
Gwalior Road, Jhansi-
284003.

ABSTRACT

Medicinal plants exploration in Nagaland has been carried out in the various forests areas of Kohima, Mokokchung, Tuensang and Zunheboto forest divisions including Various attempts have also been made for the acclimatization through cultivation of medicinal plants from one zone to another in the garden of Ayurveda Regional Research Institute Itanagar High valued medicinal plants from the state of Nagaland are *Acorus calamus*, *Aquilaria malaccensis*, *Costus speciosus*, *Curcuma caesia*, *Embelia ribes*, *Gmelina arborea*, *Homalomena aromatica*, *Mesua ferrea*, *Rubia cordifolia*, *Smilax china*, *Solanum kurzii*, *S. nigrum*, *S. torvum*, *Thalictrum foliolosum*, *Trichosanthis bracteata*, *Valeriana jatamansi*, *Zanthoxylum armatum*,

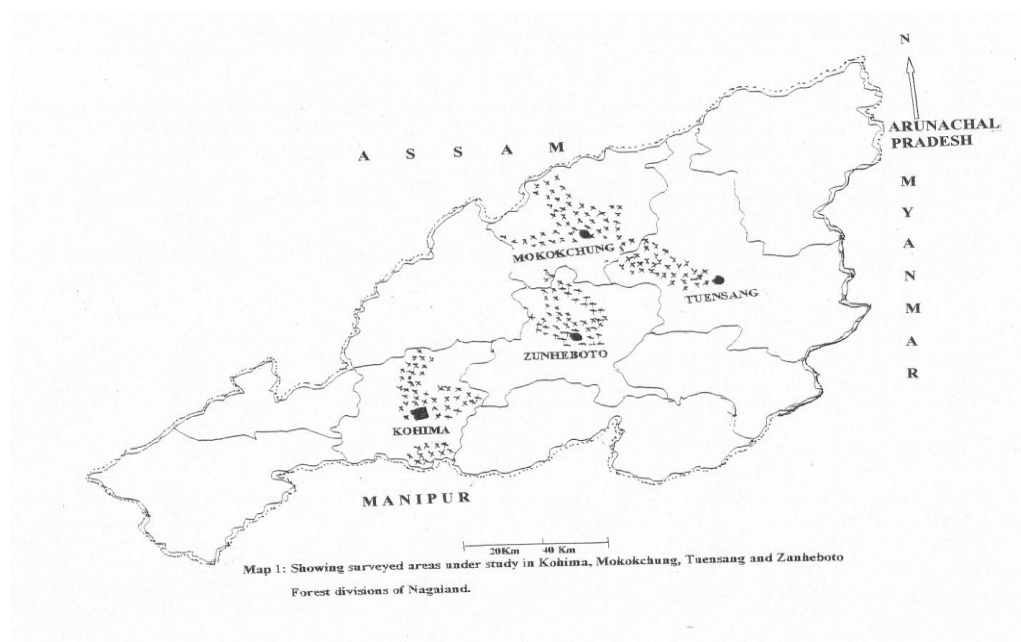
etc. For the study of the potential and sustainable collection from forest areas, interaction with local people involved either in collection or having knowledge about the collection in and adjoining areas. Various conservational aspects for in-situ conservation and aspects on easy methods for cultivation which are easily acceptable by the inhabitants nearby forest areas have been worked out which is incorporated in the paper.

KEYWORDS: Conservation, threatened, *Oroxylum indicum*, *Solanum nigrum*, *Thalictrum foliolosum*.

INTRODUCTION

Nagaland the state of North Eastern India located in the Middle Eastern part of North East Region of India bordering with Myanmar in the East, Part of Assam and Tirap district of

Arunachal Pradesh in North, Assam in the West and state of Manipur in the South. It covers an area of hilly tract with forest cover of tropical, sub tropical and temperate hills. It has an area of 16,579 square kilometers (6,401 sq mi) with a population of 2275,000 as per Census, 2011. The state is covered with 11 districts namely Dimapur, Kohima, Wokha, Mokokchung, Mon, Tuensang, Kiphire, Peren, Longlen, Phek and Zunheboto districts. The areas covered under the study falls into Tuensang and Mokokchung having Tzusapang village (Tuensang), Chara Town (Tuensang), New Tsoru village (Tuensang), Koding (Tuensang) and Mokokchung Forest divisions and areas Ugma, Meylong village, Longsa, Chubanimkum, Sapotimi Tichpani, Tichipa, Zekhuta, Khensa, Chungtiya, Sabanyo, New Camp, Changti, Wachen, Meri Yum, Longwin, Lengtho, Tsuranmgkong, Vikuto, Aosengden village areas under Mokokchung district. The state is mostly inhabited by Angami, Chang, Konyak, Lotha, Sumi, Chakhesang, Khiamniungan, Dimasa Kachari, Phom, Rengma, Sangtam, Yimchunger, Kuki, Zeme-Liangmai (Zeliang) and Pochury as well as a number of sub-tribes out of which AO Naga tribes in Kohima and Mokokchung and various other tribes like Chang, Khiamniungam, Yimchungru, Sangtam in Zunheboto and Tuensang. As per the State of Forest Report 2003, published by the Forest Survey of India, Nagaland has a forest cover of 9,222 km², which is 55.5% of the total geographical area of the state. These forests receive abundant rainfall and support a vast variety of floral and faunal biodiversity. Exploration of ethno medicinal plants in Nagaland has been made by Rao and Jamir, 1982a, 1982b Jamir, 1989, 1990, 1991, 1997, Jamir and Rao, 1990 a, 1990b, Shankar and Devella, 2012, Shankar et al, 2015 and others.



METHODOLOGY

Extensive exploration of the districts of Mokokchung, Kohima, Tuensang and Zunheboto of Nagaland has been made. Records of the collections have been observed with Global Positioning System (GPS) at different places with their distribution recorded at different spots. Frequency of the important medicinal plants has been made by using quadrat with an edge length of 1 meter for herbs, 10 meters for shrubs and 1 Kilometer for tree species. The Herbarium vouchers were made by drying, pressing and mounting on Herbarium sheets and deposited in the Herbarium of Ayurveda Regional Research Institute (Acronym ARRI). Authenticity of Herbarium was made after consulting the Herbarium of Botanical Survey of India, Arunachal Pradesh Circle, Itanagar. During field observation, suitability of medicinal plants with high demand and commercial values as well as methods for conservation and cultivation has also been studied by bringing the sufficient germ plasma for cultivation and cultivating in the Medicinal Plants Garden of Ayurveda Regional Research Institute Itanagar.

OBSERVATION

Extensive exploration of medicinal plants of Kohima, Mokokchung, Tuensang and Zunheboto, and districts of Nagaland has been made in different season with an emphasis on pressure of exploitation and status as per GPS records for most of the forest areas in the state. The important medicinal plants distributed in the state are *Acorus calamus*, *Abroma augusta*, *Amorphophallus bulbiferus*, *Argyrea nervosa*, *Brugmantia suaveolens*, *Cissampelos pareira*, *Costus speciosus*, *Crasocephalum crepioides*, *Curcuma aromatica*, *C. longa*, *C. zedoaria*, *Cuscuta reflexa*, *Datura stramonium*, *Dendrobium nobile*, *Embelia ribes*, *Melastoma malabathricum*, *Oroxylum indicum*, *Oxyspora paniculata*, *Paederia foetida*, *Phyllanthus amarus*, *Rubia manjith*, *Sida acuta*, *S. rhombifolia*, *Smilax glabra*, *Solanum nigrum*, *S. kurzii*, *S. viarum*, *Stachytaphata imbricata*, *Thalictrum foliolosum*, *Tinospora cordifolia*, *Trichosanthes bracteata*, *T. tricuspidata*, *Valeriana jatamansi*, *Writia arborea*, *Zanthoxylum armatum* etc. Medicinal plants are widely used by local traditional healers as well as collectors for trade. Cultivation of some of the medicinal plants is also in practice.

Exploration of medicinal plants needs the identifying areas for maximum occurrence of commercially viable species of medicinal plants, potential of such species in a particular area for commercial utility, less occurring medicinal plants species whose conservation is the need of time, utilization of medicinally important species under local health practices or other ways of use like food, ornamental or timber etc. and the land suitable for undertaking

medicinal plants cultivation. During various explorations in the three districts of Arunachal Pradesh all such types of status has been recorded. During course of exploration it was observed that local traditional healers are using locally available herbs for the treatment of various ailments, Commercial exploitation of *Acorus calamus*, *Curculigo orchoides*, *Curcuma aromatica*, *Oroxylum indicum*, *Smilax glabra*, *Rubia manjith*, is at highest level. People are collecting plants in unplanned and non-scientific manner. Distribution of medicinal plants in different forest areas as per GPS markings is described in table-1.

Frequency of certain medicinal plants per unit area has been described in table 2 for herbs, shrubs and tree species. Paper is supplemented with selected photographs of medicinal plants from the study areas in Nagaland (Photoplates 1and 2.)

Table 1. Showing distribution of Medicinal plants at different longitudinal/ latitudinal spots in areas of, Kohima, Mokokchung, Zunheboto, and Tuensang districts of Nagaland.

S. no.	Name of the Specimen			Locality/ Habit	GPS Data
	Botanical name	Sanskrit name	uses		
1	<i>Abacopteris multilineata</i> (Wall.ex Hook.) Ching	Khrakianag	Stomach disorder	Mokokchung/ fern	26°14.931E 94°32.588N
2	<i>Abelmoschus moschatus</i>	Lata Kasturika	Tonic, stimulant	Kohima/ herb	25° 38.475 E 94° 10.188 N
3	<i>Abroma augusta</i> (L.) L.f	Ulatkambal	Uterine disorder, rheumatism, diabetes.	Mokokchung/ Shrub	26°14.878E 94°32.588N
4	<i>Abrus precatorius</i> L.	Gunja	Seed purgative, tonic	Kohima/ climber	25° 38.359 E 94° 10.544 N
5	<i>Achyranthus aspera</i> L.	Apamarg	Plant purgative, used in arthritis,	Dimapur-Meziphema/ herb	25° 48 614 E 93° 47 278 N
6	<i>Adhatoda zeylanica</i> Medic	Vasak	Cough, rheumatism.	Mokokchung/ shrub	26°22.709E 94°26.214N
7	<i>Adiantum lunulatum</i>	Hanspadi	Cough	Kohima	25° 38.573 E 94° 09.895 N
8	<i>Ageratum conizoides</i> L	Neem	Allergic rhinitis and sinusitis	Tzusepang/ herb	26°17.601E 94°36.662N
9	<i>Alnus napalensis</i> D. Don	Udis	Mouth and throat infection	Kohima/ tree	27° 06.249 E 93° 37.967 N
10	<i>Alpinia galanga</i> (L.) Willd.	Ghor vach	colds and sore throats	Mokokchung/ herb	94°25.318N 26°24.382E
11	<i>Amaranthus spinosus</i> L.	Pasum; Katili Chaulai	Fever, bronchitis, snake bites, bacillary dysentery, diarrhea.	Mokokchung/ herb	26°13.642E 94°32.203N
12	<i>Angiopteris evecta</i> (J.R. Forst.) Hoffm	Ghora top	Headache	Mokokchung/ fern	26°25.731E 94°24.103N
13	<i>Artemisia vulgaris</i> L.	damanak	Fever, malaria	Kohima/ herb	27° 06.249 E 93° 37. 967 N
14	<i>Artocarpus heterophylla</i> Lam.	Kathal	Asthma, skin disease, diarrhea	Mokokchung/ tree	26°23.487E 94°26.977N
15	<i>Bauhinia variegata</i> L.	Kanchanar	Diabetes, asthma, ulcer	Tzusepang/tree	26°15.511E

					94°38.149N
16	<i>Bixa orellana</i> L.	Sinduri	Skin diseases, gonorrhoea	Mokokchung/ tree	26°22.929E 94°26.484N
17	<i>Blechnum orientale</i> L.	Papata	Fungal skin infection, diarrhea	Tzusepang/ fern	26°14.248E 94°37.942N
18	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Patharchoor	Kidney stones, urinary disorders	Mokokchung/herb	26°22.929E 94°26.484N
19	<i>Buddleja asiatica</i> Lour	Brahma kamal	Skin complaints and abortificant.	Tzusepang/ shrub	26°15.511E 94°38.147N
20	<i>Brugmansia suaveolens</i> (Humb. & Bonpl.ex Willd.) Bercht. & J.Presl	Dhatura	Wounds and snakebites	Mokokchung/ shrub	26°22.929E 94°26.484N
				Tzusepang/ shrub	26°17.065E 94°36.670N
21	<i>Cajanas cajan</i> (L.) Millsp	Adhaki	Hepatitis, diabetes, urinary infections	Mokokchung/ herb	26°16.224E 94°34.608N
22	<i>Callicarpa arborea</i> Roxb.	Kumbhi	Fever, blood dysentery	Tzusepang/ shrub	26°14.248E 94°37.47 N
23	<i>Canna orientalis</i> Rosc.	Vasanti	Diuretic fever		25° 32.186 E 94° 08.153 N
24	<i>Cheilanthes farinosa</i> (Forssk.) Kaulf	Silver fern	Mental disorder, cough	Tzusepang/ fern	26°15.573E 94°37.198N
25	<i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees & C.H. Eberm	Tejpat	Diabetes, cough digestion	Mokokchung/ tree	94°23.731N
26	<i>Cissampelos pariera</i> L.	Patha	Colds, cough, bronchitis, asthma	Tzusepang/ climber herb	26°15.511E 94°38.149E
27	<i>Clerodendrum infortunatum</i> L.	Bhant	Asthma, cough	Mokochung/ shrub	26°20.796E 94°23.508N
28	<i>Coccinia indica</i> W. & A.	Buimbi, Kundru	Leaf and root juice used in diarrhea	Dimapur-Meziphema	25° 48 614 E 93° 47 278 N
29	<i>Combretum decandrum</i> Roxb.	Punkh			25° 53.671 94° 12.096
30	<i>Costus speciosus</i> (Koen.) Sm.	Kebuk	Rhizome tonic, jaundice	Lumami	26°14.759 94°24.797
31	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Parvati	Cough, tonsil	Mokokchung/herb	94°33.203E 26°13.642N
32	<i>Cryptolepis buchhananii</i> Roem. & Sch,	Sariva	Tonic, arthritis	Kohima/ climber	25° 39.339 94° 09.03
33	<i>Curculigo orchidoies</i> Gaertn	Kali musli	Anti-asthmatic and anti-inflammatory	Tzusepang/ herb	94°37.047E 26°14.248N
34	<i>Curcuma longa</i> L.	Haldi		Kohima/ herb	25° 39.382 94° 05.258
35	<i>Cyathea gigantea</i> (Wall. ex. Hook.)	Jata Shankari	Hepatoprotective activity	Tzusepang/ tree fern	26°12.068N 94°36.090E
36	<i>Dendrobium nobile</i> Lindl.	Swarn Jivanti Bhed	Neural tonic	Dimapur-Meziphema/ epiphyte	25° 48 614 N 93° 47 278 E
37	<i>Desmostachya bipinnata</i> (L.)	Barhi	Urinary disease	Tzusepang/ herb	26°17.697N 94°36.814E
38	<i>Desmodium gangeticum</i> (L.) DC.	Shalaparni	Tonic in chronic fever, diarrhea	Lumami/ herb	26°12.142 94°28.737
39	<i>Dicranopteris linearis</i> (Burm.)		Wounds, antihelmintic	Tzusepang/ fern	26°17.068N 94°36.090E
40	<i>Dioscorea bulbifera</i> L.	Kalhalu	Anorexia, diuretic property	Tzusepang/ scandant shrub	26°17.340N 94°37.090E
41	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Avijola	Snakebite, boils, fever	Tzusepang/ herb	26°17.601N 94°36.662E

42	<i>Drynaria quercifolia</i> (L.) J. Sm.	Ashwakatri	Cough, typhoid, diarrhea, migraine	Mokokchung/ fern	26°13.778N 94°38.298E
43	<i>Duabanga grandiflora</i> (DC.) Walp.	Khokhan		Mokokchung/ tree	26°15.282N 94°31.743E
44	<i>Embelia ribes</i> Burm. f.	Vidanga	Gastritis and constipation.	Tzusepang/ scandant shrub	26°12.068N 94°36.090E
45	<i>Engelhardtia spicata</i> Blume	Mahwa	Skin disease		25° 36.266 N 94° 11.81 E
46	<i>Entada scandes</i> (L.) Benth.	Prthvika	Wounds, fever, skin disease.	Mokokchung/ scandent	26°15.786N 94°25.115E
				Tzusepang/ climber	26°12.068N 94°36.90 E
47	<i>Equisetum arvens</i> L.	Horstail	Gonorrhoea and bone fracture	Tzusepang/ herb	26°17.340N 94°37.090E
48	<i>Eryngium foetidum</i> L.	Bhndhanya	Earache, fevers, constipation, fits, asthma, stomachache	Mokokchung/ herb	26°17.280N 94°23.754E
49	<i>Euphorbia royleana</i> Boiss.	Snuhi	Ear ache	Mokokchung shrub	25° 36.165 N 94° 06.896 E
50	<i>Gnaphalium luteo-album</i> L.	Vajrokantaka	Astringent	Mokokchung/ herb	26°13.642N 94°33.203E
51	<i>Girardinia diversifolia</i> (Link.) Friss.	Bichhuwa	Astringent	Mokokchung/ herb	26°17.280N 94°23.754E
52	<i>Hedychium spicatum</i> Buch-Ham ex Sm.	Sati	Leaf decoction used in fever and headache	Akukulato/ herb	26°06.801N 94°30.430 E
			Fevers, vomiting, diarrhoea, inflammation	Mokokchung/ herb	26°25.558N 94°23.619E
53	<i>Hedyotis scandens</i> Roxb.	Bishma	Stomach pain, boils	Tzusepang/ scandent	26°15.650N 94°38.147E
54	<i>Hemidesmus indicus</i> R. Br.	Anantmool	Stomach problems, cure rashes	Tzusepang/ climber	26°17.172N 94°36.670E
				Mokokchung/ climber	26°15.096N 94°31.954E
55	<i>Hibiscus cannabinus</i> L.		Seeds tonic, aphrodisiac	Mokokchung/ shrub	26°16.952N 94°23.730E
56	<i>Hibiscus rosa-sinensis</i> L.	Japa	Cough, syphilis, gonorrhea	Mokokchung/ shrub	26°14.070N 94°31.820E
57	<i>Juniperus racemosa</i> <u>Risso</u>	Vapusha	Urinary tract infections, kidney and bladder stones, snakebite, diabetes, and cancer.	Mokokchung/ tree	26°20.911N 94°28.825E
58	<i>Litsea citrata</i> Blume.	Vasa	Toxic mosquito repellent	Tzusepang/ tree	26°15.511N 94°38.149E
59	<i>Lycopodium cernuum</i> L.	Mazbala	Hepatitis, chronic cough	Mokokchung/ fern	26°16.952N 94°23.731E
60	<i>Lygodium flexuosum</i> (L.) Sw.	Bhoolan bhel	Asthma, cough, arthritis	Tzusepang/ climbing fern	26°15.844N 94°36.670E
61	<i>Maesa chisia</i> Buch.-Ham. ex D. Don,	Vidang bhed	Worm, digestion	Tzusepang/ shrub	94°37.198E 26°14.573N
62	<i>Mallotus philippensis</i> (Lam.) Muell. Arg	Kampillak	Bronchitis, abdominal diseases, spleen enlargement	Mokokchung/ tree	26°13.566N 94°33.164E
63	<i>Mangifera indica</i> L.	Amra	Dysentery, cough, diarrhea, asthma, bronchitis.	Tzusepang/ tree	26°15.511N 94°38.147E
64	<i>Melastoma malabathricum</i> L.	Mandal	Diarrhea	Mokokchung/ shrub	26°21.254N 94°28.489E
65	<i>Melilotus alba</i> (Desv.)		Congestions and	Tzusepang/ herb	26°17.068N

			haemorrhages		94°36.090E
66	<i>Melothria heterophylla</i> (Lour.) Cogn	Antmool	Diabetes mellitus	Mokokchung/ climber	26°10.797N 94°33.818E
67	<i>Mimosa pudica</i> L.	Lajjalu	Diarrhea, bleeding piles, urinary infection.	Mokokchung/ herb	94°34.608E
68	<i>Nasturtium indicum</i> Wall. ex Hook.f.	Piriya Halim	Asthma, chronic catarrh and pyorrhea	Mokokchung/ herb	26°10.797E 94°33.551N
69	<i>Nephrolepis cordifolia</i> (L.) Presl		Cold, chronic coughing, enteritis-diarrhea.	Mokokchung/ herb	26°18.582E 94°24.422N
70	<i>Nicotiana tabacum</i> L.	Tamaghu	Catarrh, colds, and fevers	Mokokchung/ herb	26°22.929E 94°26.484N
71	<i>Ocimum tenuiflorum</i> L.	Tulasi	Cough fever, diabetes	Kohima	25° 43.965 N 94° 01.460 E
72	<i>Operculina turpethum</i> (L.) S.Manso	Trivrit	Heart disorders	Mokokchung/ herb	26°14.582N 94°31.820E
73	<i>Osbeckia crinite</i>	Chulasi	Toothache	Tzusepang/ herb	26°15.650N 94°38.147E
74	<i>Oxalis corniculata</i> L.	Changeri	Digestion	Kohima/ herb	25° 32.975 N 94° 08.055 E
75	<i>Oxyspora paniculata</i> (D.Don.) DC		Ulcerative colitis	Mokokchung/ herb	26°18.582E 94°24.422N
76	<i>Paederia foetida</i> L.	Prasarani	Arthritis, tonic	Tzusepang/ scandent	26°17.068E 94°36.090N
77	<i>Pandanus tectorius</i> Parkinson ex Zucc.	Ketaki	Tonic	Tzusepang/ scandent	26°12.068N 94°36.090E
78	<i>Perilla ocymoides</i> L. var. <i>crispa</i> Benth	Van tulasa	Asthma, nausea	Mokokchung/ herb	26°24.523E 94°22.337N
79	<i>Peristrophe bicalyculata</i> . Nees	Kakajanghi	Anti-inflammatory and anti bacterial property.	Tzusepang/ herb	26°17.065E 94°36.639N
				Mokokchung/ herb	26°22.929E 94°26.484N
80	<i>Pholedata imbricata</i> (Roxb.) Lindl.		Tonic	Kohima/ epiphyte	25° 39.599 N 94° 046.42 E
81	<i>Phyllanthus amarus</i> L.	Bahupatra	Scabies, ulcers and wounds.	Mokokchung/ herb	26°10.911E 94°31.825N
82	<i>Piper betle</i> L.	Tambul, Tamul	Leaf carminative, digestive	Dimapur-Meziphema/ scandent	25° 46 082 N 93° 49 247 E
83	<i>Piper peepuloides</i> Roxb.	Pippali Bhed	Stimulant	Mokokchung/ scandent	26°20.796E 94°23.508N
84	<i>Pinus trifoliata</i> Chiede ex Schltdl	Sarala	Joint pain	Mokokchung/ tree	26°18.682E 94°24.582N
85	<i>Plantago erosa</i> Wall. in Roxb.,	Lahuriya Aswagola bheda	Anti-inflammatory	Tzusepang/ herb	26°15.341N 94°37.090N
86	<i>Polypodium vulgare</i> L.	Bisphaz	Tonic	Mokokchung/ fern	26°13.642N 94°33.203E
87	<i>Pouzolzia bennatiana</i> Wight	Oek	Vegetable, antioxidant	Kohima/ herb	27°06249 N 93°57.967 E
88	<i>Pteris quadriaurita</i> Retz	Vidari	chronic disorders	Kohima/ fern	27°06249 N 93°57.967 E
				Tzusepang/ fern	26°15.341N 94°37.948E
89	<i>Ranunulus aquatilis</i> L.		Rheumatism, asthma, fever.	Kohima/ herb	25° 34.052 N 94° 06.847 E
90	<i>Ricinus communis</i> L.	Eranel	Rheumatism, pain	Mokokchung/ shrub	26°13.778N 94°38.298E
91	<i>Rhus chinensis</i> Mill.	Kartaka	Laryngitis, snakebite, stomach-ache traumatic	Tzusepang/ shrub	26°17.172N 94°36.670E

			fractures		
92	<i>Rhus semialata</i> Murr	Rungla	Diarrhea and dysentery	Tzusepang/ Shrub	26°12.068E 94°36.090N
93	<i>Rubia sikkimensis</i> Kurz	Raspberry	Tonic	Tzusepang/ climber	26°14.248N 94°37.747E
94	<i>Rubus rugosus</i> Sm.	Hinsalu	Tonic	Tzusepang/ shrub	26°14.248N 94°37.198E
95	<i>Rubus ellipticus</i> Sm.	Raspberry	Fevers, gastric troubles, diarrhea and dysentery	Mokokchung/ scandent	26°10.724N 94°34.529N
96	<i>Rungia parviflora</i> Nees	Parpita	Fever, gastritis, diarrhea	Mokokchung/ herb	26°14.070N 94°31.820E
97	<i>Scindapsus officinalis</i> (Roxb.) Schott	Gajapippali	Asthma, dysentery and problems of throat	Mokokchung/ scandent	26°10.724N 94°34.529E
98	<i>Sida rhombifolia</i> L.	Bala	Tonic, cooling	Tzusepang/ herb	26°17.172N 94°36.670E
99	<i>Smilax glabra</i> Roxb.	Chobchini	Acute bacterial dysentery, rheumatoid arthritis and syphilis.	Mokokchung/ scandent	94°24.422E 26°18.582N
100	<i>S. ovalifolia</i> Roxb. ex D. Don	Kumarika	Veneral diseases, urinary complaints and dysentery.	Mokokchung/ herb	94°23.523E 26°20.139N
101	<i>S. zeylanica</i> L.	Chobchini	Ulcers	Mokokchung/ herb	26°20.796N 94°23.508E
102	<i>Sphenomeris chinensis</i> (L.) Maxon		Swelling, gonorrhea	Mokokchung/ fern	26°16.952N 94°23.730E
103	<i>Spilanthus acmella</i> Murr	Akarkara	Tooth pain	Mokokchung/ herb	26°1N3.642N 94°33.203E
104	<i>Spilanthus paniculata</i> Wall. ex DC.	Akarkara	Toothache and infections of throat and gum, arthritis, stomatitis, ulcer	Tzusepang/ herb	26°12.068N 94°36.090E
105	<i>Solanum kurzii</i> Jacq.	Kantakari	Cough, worm, edible	Tzusepang/ shrub	25° 41.003 N 94° 06.173 E
106	<i>S. nigrum</i> L.	Kakmachi	Digestive Liver disorders, vegetable	Mokokchung/shrub	26°1N3.642N 94°33.203E
107	<i>S.torvum</i> Sw.	Brihati bhed	Liver, spleen enlargement	Kohima/ shrub	25° 48.941 N 94° 08. 410 E
108	<i>S. viarum</i> . Dunal	Kantakari	Cough, worm	Mokokchung/ Herb	26°15.2N82N 94°31.E743E
109	<i>Spondias pinnata</i> (L.f.) Kurz.	Amrataka	Digestion	Mokokchung/ tree	26°11.735N 94°33.867E
				Kohima/ tree	25° 34.156 N 94° 06.801 E
110	<i>Stachytarphata imbricate</i> Vahl	Simainayuruvi	Liver and rheumatism	Mokokchung/ herb	26°15.2N82N 94°31.E743E
111	<i>Stephania japonica</i> (Thumb.) Miers	Rajapatha	Urinary and heart related disorders.	Mokokchung/ climber	26°14.070N 94°31.820E
112	<i>Tectaria macrodonta</i> C. Chr.	Kharakianag	Rhizome in snake bite	Mokokchung/ fern	26°15.096N 94°31.954E
113	<i>Tephrosia candida</i> DC.	Ban tor	Insecticide, skin diseases	Tzusepang/ shrub	26°15.341N 94°37.307E
114	<i>Terminalia myriocarpa</i> Heurck & Muel. Arg.	Hollock	Bark cardiac tonic	Kohima/ tree	25° 38.475 N 94° 10.188 E
115	<i>Thalictrum foliolosum</i> DC.	Peetmoolika	Root tonic, purgative.	Kohima/ herb	25° 34.052 94° 06.847
116	<i>Thunbergia grandiflora</i> Roxb.	Loyga	Leucorhoea Rheumatic arthralgia, algomenorrhea	Mokokchung/herb	26°19.576N 94°23.841E
117	<i>Tinspora cordifolia</i>	Guduchii	Diabetes, high	Mokokchung/climber	26°23.591N

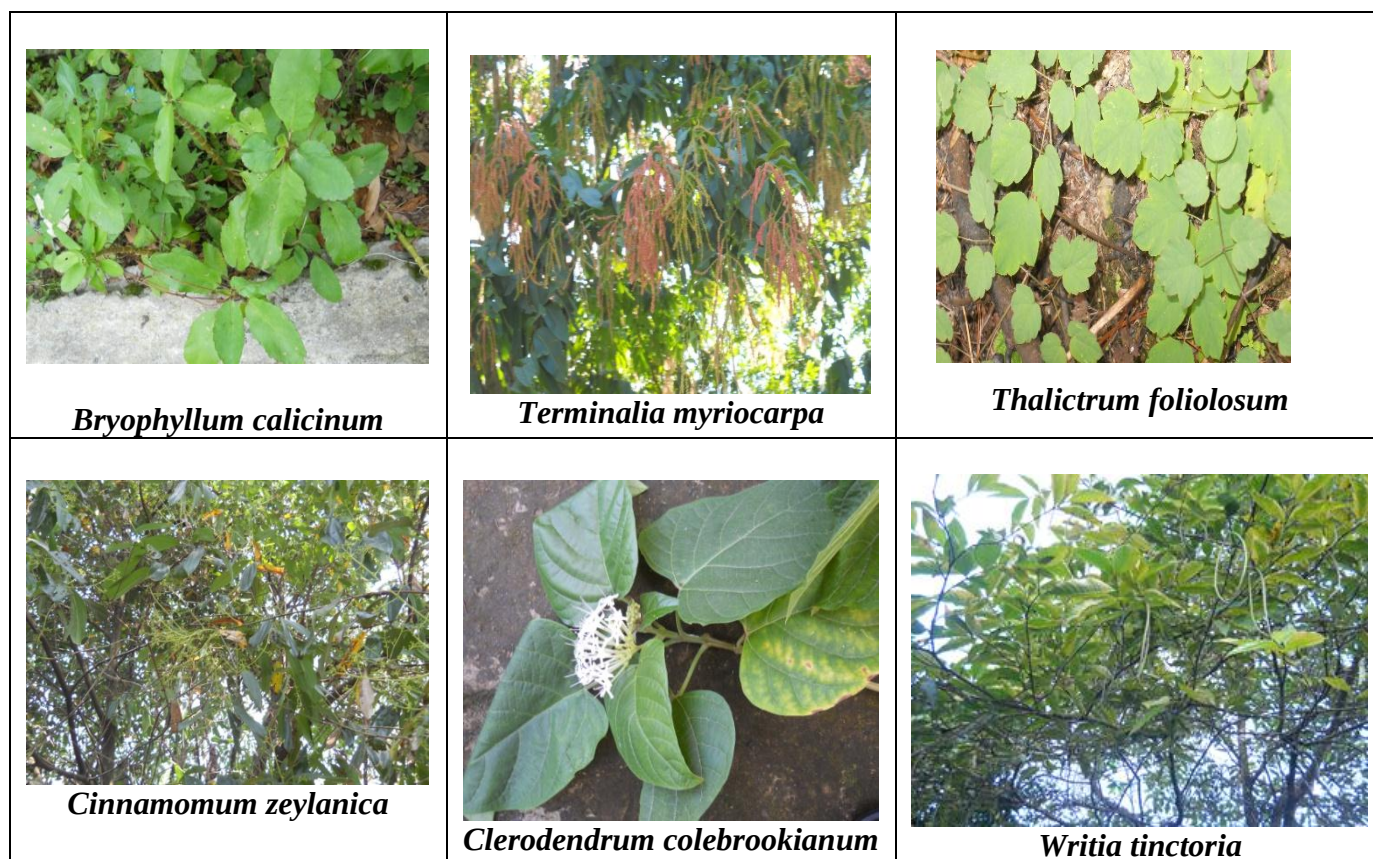
	(Willd.) Miers		cholesterol, allergic rhinitis		94°27.236E
118	<i>Toona ciliata</i> M. Roem	Toon	Antibacterial and antifungal property,	Mokokchung/ tree	26°15.396N 94°31.373E
119	<i>Trema orientalis</i> (L.) Blume	Jivanti	Coughs, sore throats, asthma, bronchitis, gonorrhea	Tzusepang/ tree	26°14.298N 94°37.47 0E
				Tzusepang/ shrub	26°17.172N 94°36.670E
	<i>Trichosanthes tricuspidata</i> Lour.	Bimbi	Fruit in asthma	Kohima/ climber	25° 34.217 E 94° 06.912 N
120	<i>Uren lobata</i> L.	Vanabhenda	dysentery, rheumatic pains, tonsillitis	Tzusepang/ shrub	26°17.172N 94°36.670E
121	<i>Valeriana jatamansi</i> Jones	Tagar/ Sugandh bala	Hypertension, hysteria, epilepsy, tonic	Kohima/ herb	25° 34.052 N 94° 06.897 E
122	<i>Vernonia cinerea</i> Less.	Sahadevi	Juice used in piles, cough	Akukulato	26°05.985 N 94°31.092 E
123	<i>Wallichia disticha</i> T. And.	Tase	Powdered stem as food	Mokokchung/Palm tree	26°15.282N 94°31.743E
124	<i>Wedelia calendulacea</i> (L.) Less.	Pila bhangara	Improves memory and intelligence	Mokokchung/ herb	26°22.929N 94°26.484E
125	<i>Writia tinctoria</i> Roxb. R.Br.	Kutaj Bhed/ Dhatkuri	Dysentery	Tzusepang/ tree	26°17.068E 94°36.090N

Table 2: Average Population density of selected important medicinal plants in different localities

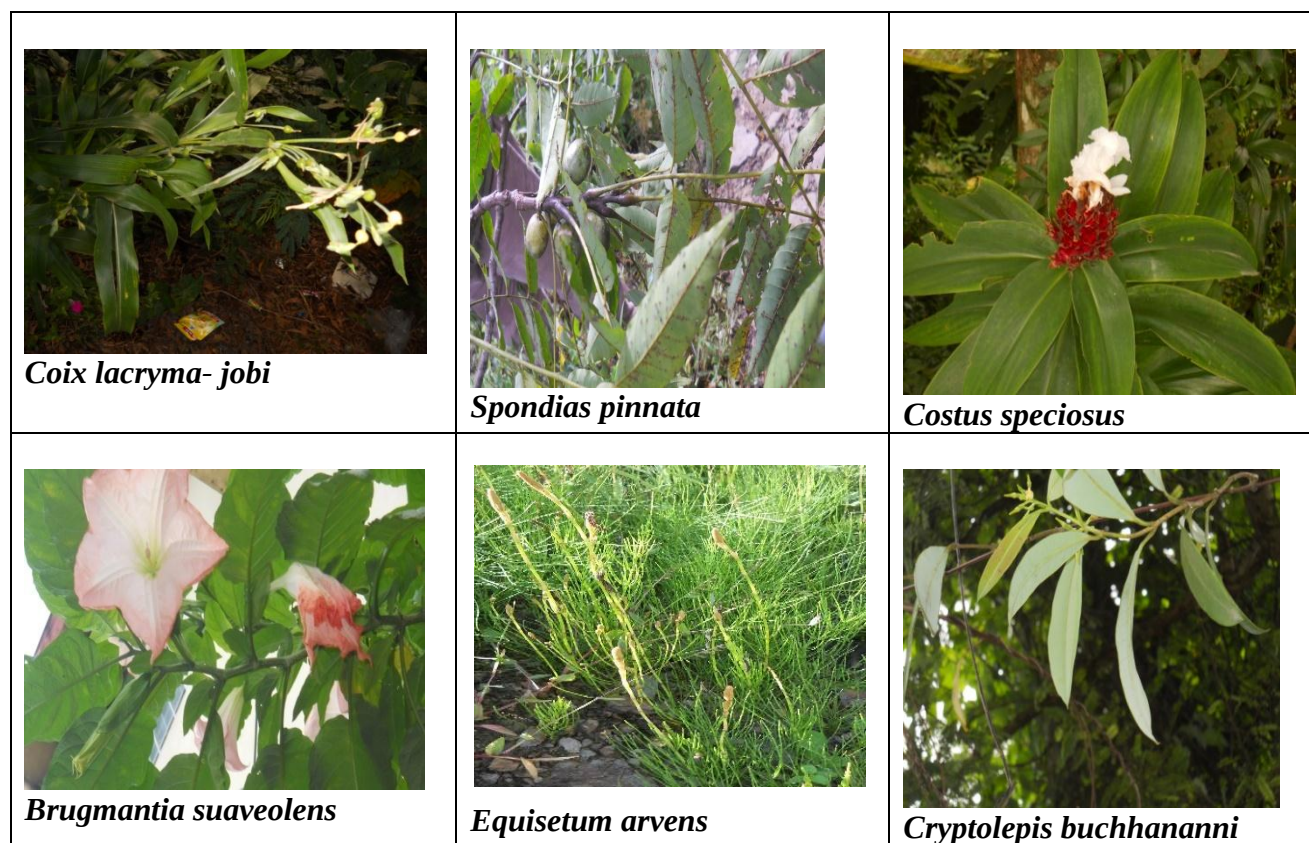
Name of plant	Location under GPS	Size of quadrate	Frequency per unit area
<i>Abrus precatorius</i>	25° 38.359 E 94° 10.544 N	100m ²	5.0 per m ²
<i>Angiopteris evecta</i>	26°25.731E 94°24.103N	100 m ²	0.3 per m ²
<i>Artemisia nilagarica</i>	27° 06.249 E 93° 37. 967 N	100m ²	8.0 per m ²
<i>Bryophyllum calycinum</i>	25° 48.604 E 94° 08.392 N	100 m ²	12.0 per m ²
<i>Cissampelos pareira</i>	26°15.511E 94°38.149E	100 m ²	1.6 per m ²
<i>Embelia ribes</i>	26°12.068N 94°36.090E	100 m ²	0.3 per m ²
<i>Equisetum arvensis</i>	26°17.340N 94°37.090E	25 m ²	12.5 per m ²
<i>Maesa chisia</i>	94°37.198E 26°14.573N	100 m ²	1.6 per m ²
<i>Paederia foetida</i>	26°17.068E 94°36.090N	100 m ²	0.4 per m ²
<i>Plantago erosa</i>	26°15.341N 94°37.090N	100 m ²	24 per m ²
<i>Ricinus communis</i>	26°13.778N 94°38.298E	100 m ²	2.3 per m ²
<i>Rubus ellipticus</i>	26°10.724N 94°34.529N	100 m ²	0.2 per m ²
<i>Rubus rugosus</i>	26°14.248N	100 m ²	0.3 per m ²

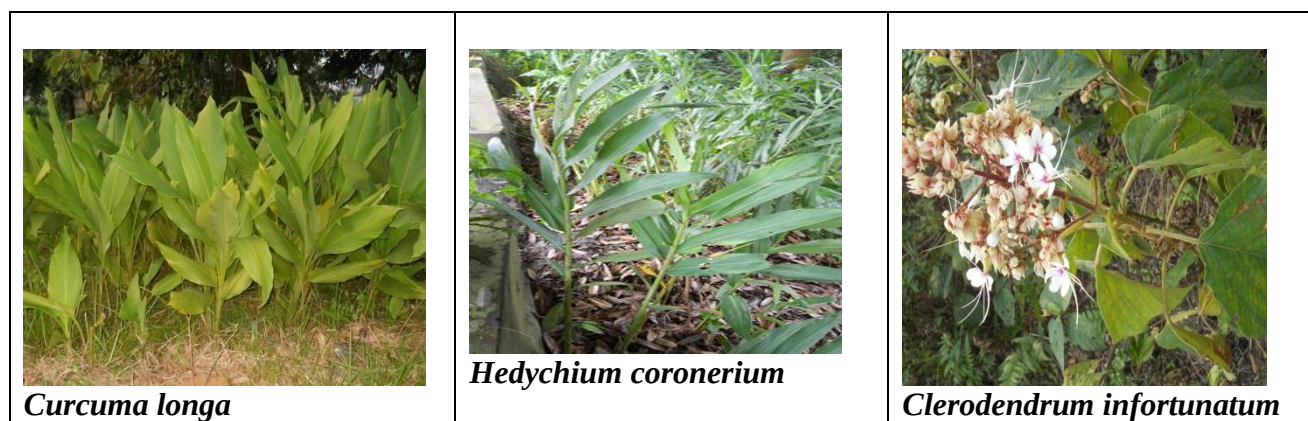
	94 ⁰ 37.198E		
<i>Scindapsus officinalis</i>	26 ⁰ 10.724N 94 ⁰ 34.529E	100 m ²	0.3 per m ²
<i>Smilax ovalifolia</i>	94 ⁰ 23.523E 26 ⁰ 20.139N	100 m ²	3.2 per m ²
<i>Sida rhombifolia</i>	26 ⁰ 17.172N 94 ⁰ 36.670E	100 m ²	13.0 per m ²
<i>Solanum nigrum</i>	26 ⁰ 1N3.642N 94E ⁰ 33.203E	10 m ²	2.3 per m ²
<i>Solanum viarum</i>	26 ⁰ 11.735N 94 ⁰ 33.867E	100 m ²	0.6 per m ²
<i>Solanum torvum</i>	26 ⁰ 15.2N82N 94 ⁰ 31.E743E	100 m ²	0.8 per m ²
<i>Spilanthes acmella</i>	26 ⁰ 1N3.642N 94 ⁰ 33.203E	100 m ²	1.2 per m ²
<i>Stephania japonica</i>	26 ⁰ 14.070N 94 ⁰ 31.820E	100m ²	0.7 per m ²
<i>Tephrosia candida</i>	26 ⁰ 15.341N 94 ⁰ 37.307E	100 m ²	0.2 per m ²
<i>Thalictrum foliolosum</i>	25 ⁰ 34.052 N 94 ⁰ 06.847 E	25 m ²	9.5 per m ²
<i>Urena lobata</i>	26 ⁰ 17.172N 94 ⁰ 36.670E	100 m ²	2.6 per m ²
<i>Valeriana jatamansi</i>	25 ⁰ 34.052 N 94 ⁰ 06.897 E	25 m ²	0.9 per m ²
<i>Vernonia cineria</i>	26 ⁰ 05.985 94 ⁰ 31.092	25 m ²	0.9 per m ²

*Ananus cosmosus**Artemisia nilagarica**Asparagus racemosus**Euphorbia royleana**Bixa orellana**Angiopteris evecta*



Photoplate 1 Showing photographs of medicinal plants





Photoplate 2. Showing photographs of medicinal plants

DISCUSSION

The paper deals with the medicinal plants distribution in different parts of Kohima, Mokokchung, Jhonneboto, Forest divisions of Nagaland which are used by different Indian System of medicine and the herbal systems in neighbouring countries like Bangladesh, Bhutan, China and Myanmar. As per topography and distribution of different tribal communities in the hills of the study areas it is found that the plants and its pharmaceutical parts are collected and traded in Indian markets as well as the neighbouring countries are being exploited in very unscientific manner i.e. cutting trees for collection of stem bark or leaf, uprooting entire plants for root, immature fruits and flowers where active principles are either developed in lesser quantity or undeveloped where fruits and flowers are the useful parts. In long run it happens that the plants are lost from the Natural habitat. Such things are happened in case of *Acorus calamus*, *Aquillaria malaccensis*, *Mallotus philippinensis*, *Oroxylum indicum*, *Rubia manjith*, *Smilax glabra* etc. due to unscientific collection and not keeping the future prospect in mind. Presently, some of the farmers have started cultivation of *Alpinia galanga*, *Aquilaria malaccensis*, *Asparagus racemosus* etc.

Total number of medicinal plants collected during the study belongs to 125 species from 118 genera and 62 families. Maximum number goes to Asteraceae with 7 species and Solanaceae with 7 species. Minimum species belongs to the families Thelypteridaceae, Moraceae, Anacardiaceae, Blechnaceae, Hypoxidaceae, Cyathaceae, Gleichnaceae, Dioscoreaceae, Pteridaceae, Cucurbitaceae, Cuppresaceae, Lomariopsidaceae, Pandanaceae, Juglandaceae, Mimosaceae, Equisetaceae.

ACKNOWLEDGEMENTS

Authors are thankful to the Director General, Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH Government of India, New Delhi-110058 for encouragements and financial assistance.

REFERENCES

1. Jamir NS. Some interesting medico botany used by Ao- A Naga tribe. Proc. Research Devel. Indig. Drugs (INMMR), New Delhi., 1989; 259-264.
2. Jamir NS. Some interesting medicinal plants used by Nagas. J. Res. Edu. Ind. Med., 1990; 9(2): 81-87.
3. Jamir NS. Studies on some medico herbs from North East India. Recent Adv. Med. Arom. Spices Crops, 1991; 1: 235-239.
4. Jamir NS. Ethnobiology of Naga tribes in Nagaland: 1, Medicinal plants: Ethnobotany, 1997; 9: 101-104.
5. Jamir NS, Rao RR. Fifty new or interesting medicinal plants used by the Zeliangs of Nagaland (India) Ethnobotany, 1990a; 2: 11-18.
6. Jamir NS, Rao RR. Ethnobotany of Ao and Angami Nagas of Nagaland. J. Econ.Taxon. Bot., 1990b; 36: 14(3): 593-604.
7. Rao RR, Jamir NS. Ethnobotanical studies in Nagaland -I Medicinal Plants. J. Econ. Bot., 1982a; 36: 176.
8. Rao RR, Jamir NS. Ethnobotanical studies in Nagaland-II 54. Medicinal Plants. J. Econ. Taxon. Bot., 1982b; 3(1): 11-17.
9. Shankar R, Devalla RB. Conservation of folk healing practices and commercial medicinal plants with special reference to Nagaland Internat. J. Biodiv. Cons., 2013; 4(3): 155-163.
10. Shankar R, Tripathi AK, Kumar A. Conservation of some Pharmaceutically important medicinal plants from Dimapur district of Nagaland. World J. Pharmaceutical Res. 3(7): 856-871.