



Medicinal Plants – Folk Remedies For Different Skin Problems Used by the MIZO Tribal’S in Mizoram, N.E India.

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ABSTRACT

The present paper deals with different medicinal plants used by the Mizo people exclusively for treating skin problems like boils, sores, dandruff, measles, allergies, burns, carbuncles, scabies, insect bites, eczema, keloids etc. 41 informants were interviewed in which the use of 105 different plant species were reported.

Keywords: Mizo, informants, carbuncles, medicinal plants, allergies

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INTRODUCTION

Documentation of traditional medicine is well acknowledged in literature that the age old practices of using plants, animals and minerals to cure numerous ailments have paved the way to further discovery of many life saving drugs (Farnsworth, 1985). The tribal populations, who have been the primary inhabitants of natural habitats, hold tremendous amount of traditional knowledge on the use of various biotic resources (Badola, *et al.*, 2003), which may have greater importance to the on-going research and discoveries.

The tribals of Mizoram used a variety of plants, animals and minerals for their primary health care. The earliest documentation was done by Thangchuanga (1979), Zoram Upa Pawl Thurawn Bu (1984), Darlianthanga (1989), Saptawna (1990), Lallianthanga (1990), Vailinga (1991) mentioned few ethnomedicinal plants along with animal parts used. Notable contribution in this field was done by Lalramnghinglova (1991, 1992, 1996, 1997, 1999 and 2002), Lalnundanga *et al.*, (1997), Lalramnghinglova & Jha (1997, 1999), Rai and Lalramnghinglova (2010).

Study area

Mizoram is located between 21°N and 24°35'N latitudes and 92°15'E and 93°29'E longitudes in the North Eastern part of India(Anon,2001). The Tropic of Cancer passes just through the Southern Periphery of Aizawl city at 23°30'N Latitude. Mizoram is a land of rolling hills, valleys, rivers and lakes and Elevation ranges from 40m at Bairabi to 2157 m at Phawngpui (Pachua, 1994). Mizoram has a mild climate of tropical, subtropical and temperate climate with four seasons namely winter, spring, summer and autumn. It is comfortable in summer with 20 °C to 29 °C (68 °F to 84 °F) and never freezing during winter, with temperatures from 11 °C to 21 °C (52 °F to 70 °F). The region is influenced by monsoons, raining heavily from May to September with little rain in the dry (cold) season. The average state rainfall is 254 cm (100 in.), per annum. The total geographical area is 21,081 km² (8,139.4 m²) with a population of 1,091,014, the Density being 51.8/km² (134/m²) (Anon, 2011).

The great majority of Mizoram's population is composed of unique cultures with different dialects. There are 14 scheduled tribes (Mizos, Mara, Lai, Riang (Bru), Chakma, Bawm and Pang etc) and are divided into numerous clans within themselves. Agriculture is the mainstay of economy where 70% of the people lived in rural areas and practice shifting cultivation.

There are 12 Government hospitals and 7 private hospitals, 12 health care centers with 57 primary health care centers and 370 sub-centers (Anon. 2011). Rural areas of Mizoram have been suffering very seriously in terms of accessibility to the basic necessities of life, like

healthcare. For them there is no alternative but to depend solely on natural medicine for their primary health care.

The study was conducted in 8 districts of the State. The study sites and their locations in their respective districts have been indicated in Figure 1 & 2.



Figure 1: Map showing location of Mizoram



Figure 2: Map showing the different study sites

MATERIALS AND METHOD

Data generation with the help of Local Health Practitioners and knowledgeable persons:

The knowledge on the use of traditional medicines is collected through questionnaires, focus group discussions and semi-structured interviews. Practitioners, knowledgeable persons of men, women and young folks of the study area are located and collect information from them. Prior

Informed Consent is obtained from these persons before documenting. They are taken to the forest for identification and collection of the specimens. Plants species collected from the area are identified with the help of herbaria of Botanical Survey of India (BSI), Shillong and taxonomic literature such as floras, manuals, journals, monographs and internet facilities are also consulted. The collected plant specimens are preserved in the form of a voucher specimen in the Herbarium of Mizoram University, Aizawl or in the Botanical garden of Mizoram University, Aizawl.

2) The Use-Value (UV) of a species:

The used value of a species is a method in which the informants were asked to identify the nature and uses of plants and/ or minerals on the basis of the medicinal and economic values. The overall mean value UV_{is} represents the number of all uses of a given plant species(s), as recognized by a single informant (i_s). Then the overall use of value of species's' (UV_s) based on the information from the total number of informants is calculated by using the following equation (Gerard, *et al.*, 2011):

$$UV_s = \sum UV_{is} / i_s$$

Where, UV_s = the overall use value of species's'.

$\sum UV_{is}$ = the use value of species as determined by the informant 'I'.

i_s = total number of informants interviewed for species 's'

3) Informant Consensus Factor (ICF):

The Informant Consensus Factor is the ratio between the number of use reports minus the number of medicinal plants and the number of use report minus one. Informant Consensus Factor is calculated to estimate the used of variability of medicinal plants. (Gazzaneo *et al.*, 2005). It is calculated by; $ICF = Nur - Nt / (Nur - 1)$

Where, Nur= the number of individual plant use reports of a particular illness category,

Nt=the use by total number of species all informants for this illness category.

4. Gender and demographic surveys

The informants were grouped based on their gender and age group in order to document their educational qualification, occupation and religion.

RESULTS AND DISCUSSION

A total of 105 plant species were recorded in the present survey for the treatment of different skin problems. These problems include skin allergies, measles, keloids, dandruff, burns, boils, scabies, ringworm, rashes, eczema, sores, wounds and warts. The 105 plant species belongs to 45 families, 96 genera, with 68 species harbored from the wild and 37 cultivated at their home

gardens. Leguminosae (10 species) being the most frequently represented family is followed by Euphorbiaceae (7 species) and Verbenaceae (6 species), Zingiberaceae, Solanaceae and Compositae (5 species each) (Table 1). As shown in Table 1, the Use value (UV) is calculated for all species, the single used for a single species is not considered for analysis (P. Bhat *et al.*, 2014). The plant species *Alstonia scholaris* got the highest used value (2.5) followed by *Azadirachta indica*, *Bauhinia variegata*, *Bergenia cillata*, *Cassia alata*, *Cassia fistula*, *Elaeagnus caudate*, *Lindernia ruelloides*, *Milletia pachycarpa*, *Phyllanthus fraternus* and *Scoparia dulcis* (2.0 each). *Alstonia scholaris* is extensively used for the treatment of Tinea versicolor, septic wounds, in removing warts and applied on boils. Wound healing capacity, anti inflammatory, anti microbial activities and anti bacterial properties have been found in this plant (Pratap *et al.*, 2013; Pankti *et al.*, 2012; Kaushik *et al.*, 2015; Ganjewala & Gupta, 2013; Dey, 2011

Table 1: Plants used in the treatment of different skin diseases

Sl.No.	Scientific Name Voucher No.	Local Name	Family	Habit /Habitat	Parts used	$\sum U$ V_{is}	i_s	U V_s	Disease
1.	<i>Acalypha indica</i> L. ZOR 16721	Chhawntun	Euphorbiac eae	H/WI	L	3	2	1. 5	Juice of the leaves applied for scabies, pruritus and eczema.
2.	<i>Achyranthes aspera</i> L. ZOR 16781	Uihlo	Amarantha ceae	H/WI	L	4	5	0. 8	Juice of the ground leaves applied for cuts, sore, bed sore and certain skin diseases in domestic animals.
3.	<i>Achyranthes bidentata</i> Blume. ZOR 16757	Vangvathlo	Amarantha ceae	H/WI	L	1	2	0. 5	Juice of the leaves applied on sores due to leech bites
4.	<i>Adhatoda vasica</i> Nes. ZOR 16734	Kawldai	Acanthacea e	S/CU	L	2	4	0. 5	Juice of the ground leaves applied on cuts and wounds. Leaves and turmeric mixed in equal proportion are also applied on sore.
5.	<i>Allium cepa</i> L. ZOR 16705	Purunsen	Liliaceae	H/CU	Rs	3	2	1. 5	Juice applied on boils, skin ulcer and sore
6.	<i>Allium sativum</i> L. ZOR 16754	Purunvar	Liliaceae	H /CU	Cl	4	4	1. 0	The cloves are cut open and rubbed into the affected area of ringworms, pruritus, Tinea versicolor, scabies.
7.	<i>Alpina bracteata</i> Roxb. ZOR 16783	Aichal	Zingiberac eae	H/WI	Rh	1	2	0. 5	Juice of the ground rhizome applied on the affected area of bee stings
8.	<i>Alstonia scholaris</i> R.Br. ZOR 16776	Thuamriat	Apocyanac eae	T/WI	La	5	2	2. 5	Latex applied on septics, warts and Tinea versicolor, boils and sore.
9.	<i>Amaranthus tricolor</i> Linn. ZOR 16714	Zamzo	Amarantha ceae	H/CU	Wp	3	2	1. 5	Yellow: Rashes and inflammation due to food allergies decoction of the whole

10.	<i>Amomum dealbatum</i> Roxb. ZOR 16735	Aidu	Zingiberaceae	H/WI	Rh	2	3	0.6	plant used for bathing. RED: Paste of whole plant bandaged upon boils and burns Juice of the ground rhizome applied on bed sore. Scraped rhizome bandaged upon boils.
11.	<i>Anogeissus acuminata</i> Wall. ZOR 16722	Zairum	Combretaceae	T/WI	B	2	3	0.6	Decoction of bark used for dressing burns and cuts. Juice of the ground bark applied on bed sore.
12.	<i>Artemisia vulgaris</i> L. ZOR 16706	Sai	Compositae	S/WI	L, Ts	2	2	1.0	Acts as a homeostasis in cuts and wounds, poultice of the leaves and tender stems applied on sore.
13.	<i>Artocarpus heterophyllus</i> L. ZOR 16755	Lamkhuan g	Moraceae	T/CU	La	2	2	1.0	Latex applied for sore, cuts and boils
14.	<i>Artocarpus lakoocha</i> Roxb. ZOR 16770	Theitat	Moraceae	T/WI	B	1	1		Ground bark bandaged upon sore in order to remove the pus.
15.	<i>Asclepias curassavica</i> L. ZOR 16746	Dingdi	Asclepiadaceae	H/WI	La, L, F	4	3	1.3	Latex applied for wart, powdered leaves and flower for sore and wounds.
16.	<i>Azadirachta indica</i> A.Juss ZOR 16783	Nim tak	Meliaceae	T/CU	Fr	4	2	2.0	Fruits rubbed on the affected area of ringworm, rashes, scabies and sores
17.	<i>Bauhinia variegata</i> L. ZOR 16736	Vaube	Leguminosae	T/WI	L, B, F, R	4	2	2.0	Decoction of leaves applied on sore, pruritus and leprosy; poultice of bark, flowers and root bark applied on septic sores.
18.	<i>Begonia dioica</i> Buch.-Ham ex	Sekhupthur	Begoniaceae	H/WI	St	1	1		The stems are cut into halves and rub into the affected area of

	D.Don 16784	ZOR							contact dermatitis.
19.	<i>Bergenia ciliata</i> Wall. 16804	ZOR	Khamdamd awi	Saxifragac eae	H/WI	L	2	1 2. 0	Juice of the leaves applied on boils, eczema.
20.	<i>Bidens pilosa</i> L.ZOR 16715		Vawkpuith al	Composita e	H/WI	L	1	1	Juice of the crushed leaves applied for cuts and wounds.
21.	<i>Bischofia javanica</i> Blume. ZOR 16785		Khuangthli	Euphorbiac eae	T/WI	Ts	1	1	At the onset of boils tender shoots mixed with <i>Artocarpus lakhoocha</i> and soot are bandaged to the affected area.
22.	<i>Blumea lanceolaria</i> (Roxb.) Druce ZOR 16747		Buarze	Composita e	S/WI	La	6	5 1. 2	Ground leaves applied on cuts, sore and bed sore, dandruff, scabies and eczema.
23.	<i>Brassica juncea</i> (L.) Czern. ZOR 16778		Tampui	Cruciferae	H/CU	L	1	1	Poultice of leaves applied on skin allergies
24.	<i>Brugmansia suaveolens</i> (Humb.&Bonpl ex wild) Bercht& J.Presl ZOR 16779		Tawtawra wt par	Solanaceae	S/WI	Se	1	1	Poultice of seeds and leaves applied on certain sore on the head.
25.	<i>Cajanus cajan</i> L. ZOR 16737		Behliang	Leguminos ae	S/CU	Fr	1	1	Fruits applied on the on the first stage of leprosy
26.	<i>Callicarpa arborea</i> Roxb. ZOR 16756		Hnahkiah	Verbenace ae	T/WI	B, L	2	3 0. 6	Juice of the ground bark applied for cuts, ground leaves bandaged upon dermatitis.
27.	<i>Camellia sinensis</i> (L.)Kuntze ZOR 16707		Thingpui	Theaceae	S/CU	L	1	2 0. 5	Decoction of leaves used for dressing burns or ground leaves bandaged upon burns.

28.	<i>Carica papaya</i> L. ZOR 16720	Thingfangh ma	Caricaceae	SU/CU	L	5	4	1. 2	Fresh juice of the leaves applied for sore, scabies, eczema, warts and boils.
29.	<i>Cassia alata</i> L. ZOR 16716	Dadu-hlo	Leguminosae	S/WI	L	4	2	2. 0	Poultice of leaves applied for Tinea versicolor, ringworms, scabies, leprosy.
30.	<i>Cassia fistula</i> L. ZOR 16768	Ngaingaw	Leguminosae	T/WI	L	2	1	2. 0	Juice of the ground leaves used for ringworm and pruritus.
31.	<i>Cassia tora</i> L. ZOR 16723	Kelbe	Leguminosae	S/WI	L, La, Fr	5	4	1. 2	Ground leaves and fruit used for pruritus, ringworm, rashes and scabies, latex applied for boils.
32.	<i>Catharanthus roseus</i> G.Bom ZOR 16786	Kumtluang	Apocyanaceae	H/CU	L	2	1	2. 0	Juice of the ground leaves applied for skin allergies and swells due to bee stings.
33.	<i>Centella asiatica</i> Urban. ZOR 16758	Lambak	Umbelliferae	H/WI	L	5	3	1. 6	Poultice of leaves applied for boils, cuts, sore, pruritus and carbuncles.
34.	<i>Chromolaena odoratum</i> L. ZOR 16767	Tlamsam	Compositae	H/WI	L	1	3	0. 3	Crushed leaves bandaged upon cuts, acts as a homeostasis.
35.	<i>Clerodendrum coolebrookianum</i> Walp. ZOR 16748	Phuihnam	Verbenaceae	S/CU	L	1	2	0. 5	Poultice of leaves bandaged upon burns, in doing so while it heals it doesn't even leave a scar.
36.	<i>Clerodendrum viscosum</i> Vent. ZOR 16708	Phuihnamc hhia	Verbenaceae	S/WI	Rs, L	2	2	1. 0	Decoction of root stock applied on scabies, decoction of leaves used for washing hair for dandruff.
37.	<i>Colebrookea oppositifolia</i> Smith. ZOR 16787	Kawithuan gsuak	Labiatae	S/WI	L	1	1		Juice of the crushed leaves applied on cuts and wounds.
38.	<i>Colocasia</i>	Dawl	Araceae	H/CU	St, La	2	2	1.	Cut stem or latex of the tuber

	<i>esculenta</i> (L.) Schott. ZOR 16780							0	applied on inflammations due to bee stings. Latex applied on cuts and wounds.
39.	<i>Commelina nudiflora</i> L. ZOR 16788	Dawng	Commelina ceae	H/WI	Ts, L	3	2	1. 5	Poultice of tender shoots and leaves applied for burns, boils.
40.	<i>Curcuma longa</i> L. ZOR 16717	Aieng	Zingiberac eae	H/CU	Rh	7	4	1. 7	Paste applied on cuts and wounds, ringworms, scabies, eczema, snake bites, splinters.
41.	<i>Curcuzana minor</i> King. ZOR 16738	Ailaidum	Zingiberac eae	H/WI	Rh	2	3	0. 6	Ground rhizome applied on cuts and wounds, eaten raw for measles.
42.	<i>Cuscuta reflexa</i> Roxb. ZOR 16701	Bawrai ral	Convolvula ceae	C/WI	St	4	3	1. 3	Poultice of the stem mixed with ginger and ghee in equal proportions applied on sores and poultice of the stem applied on scabies and pruritus. Juice of the ground stem prevents dandruff and lice.
43.	<i>Dysoxylum glabra</i> Merr. ZOR 16724	Thingthupu i	Meliaceae	T/WI	L	1	1		Decoction of leaves taken for hyper pigmentation.
44.	<i>Elaegnus caudata</i> Schlect. ht. ZOR 16759	Sarzuk	Elaeagnace ae	S/WI	L, Tw	2	1	2. 0	Decoction of leaves taken for hyper pigmentation. Twigs bandaged splinters in order to suck the thorn out.
45.	<i>Embllica officinaalis</i> Geartn. ZOR 16760	Sunhlu	Euphorbiac eae	T/CU	Fr, L	3	4	0. 7	Ground fruits taken raw in case of rashes due to food allergies, powdered fried leaves applied on fire burns and scalds.
46.	<i>Eryngium foetidum</i> Lam. ZOR 16739	Bahkhawr	Umbellifer ae	H/CU	Wp	2	2	1. 0	Ground paste of the whole plant applied on the affected area of snake, dog and cat bite. Leaves

47.	<i>Erythrina stricta</i> Roxb. ZOR 16725	Fartuah	Leguminosae	T/WI	B	1	1		mixed with calcium chloride applied on burns. Decoction of bark applied on cuts
48.	<i>Euphorbia royleana</i> Boiss. ZOR 16801	Chawng	Euphorbiaceae	SU/CU	St, La	3	2	1.	Ground stem bandaged upon splinters, latex applied for sores and bed sore.
49.	<i>Ficus semicorelata</i> Buch.-Ham ex Sm. ZOR 16719	Theipui	Moraceae	T/WI	La	2	2	1.	Latex applied at the onset of boils and on cuts.
50.	<i>Giardinia hetrophylla</i> DC. ZOR 16790	Kangthai	Urticaceae	H/WI	L	1	1		Decoction of leaves used for washing hair in order to prevent dandruff
51.	<i>Gmelina arborea</i> L. ZOR 16749	Thlanvawng	Verbenaceae	T/WI	L	2	2	1.	Juice of the leaves applied for skin allergies, used for dressing sores.
52.	<i>Hibiscus rosasinensis</i> L. ZOR 16791	Midumpan	Malvaceae	S/CU	F	2	2		Fresh juice of the flowers used for cuts and sores
53.	<i>Homalomena aromatic</i> Schott. ZOR 16802	Anchiri	Araceae	H/WI	Rh	1	2	0.	Ground rhizome bandaged upon affected area of tick bites.
54.	<i>Ipomoea betatas</i> (Linn.) Lamk ZOR 16709	Kawlbahra	Convolvulaceae	C/CU	Rs, L	2	2		Ground rootstock applied on scorpion stings, poultice of leaves mixed with salt used for Paronychia.
55.	<i>Jathropa curcas</i> L. ZOR 16726	Kangdam	Euphorbiaceae	ST/WI	La, L	6	5	1.	Latex / poultice of leaves applied for cuts, sores of all kinds, ringworm, scabies, pruritus and burns.
56.	<i>Lablab</i>	Bepui	Leguminosae	C/CU	L	3	2	1.	Juice of the leaves applied on

	<i>purpureus</i> (L.) Sweet. ZOR 16766		ae					5	cuts and poultice of leaves applied on snake bite. Decoction of leaves taken for rashes due to food poisoning.
57.	<i>Lantana camara</i> L. ZOR 16740	Shilong tlangsam	Verbenaceae	S/WI	L	1	1		Decoction of leaves used for dressing eczema
58.	<i>Lindernia ruellioides</i> Spreng. ZOR 16775	Thasuih	Scrophulariaceae	H/WI	L	2	1	2.	Decoction of leaves applied on ringworms, bandaged upon cuts and wounds.
59.	<i>Mangifera indica</i> L. ZOR 16789	Theihai	Anacardiaceae	T/CU	La	2	2	1.	Resinous gums applied for pruritus and scabies.
60.	<i>Melia azedarach</i> L. ZOR 16710	Nim suak	Meliaceae	T/WI	L, B, Fr	7	5	1.	Poultice of leaves, bark and fruit in equal proportion are applied for leprosy and septic wounds. Decoction of leaves for sun burns, fried 10gms of leaves taken daily before meals prevents scabies. Juice of the ground leaves applied twice a day for carbuncles and abscess. Poultice of leaves applied for dermatitis.
61.	<i>Melocanna baccifera</i> (Roxb.) Kurz ZOR 16727	Mautak	Graminae	Ba/WI	St	1	2	0.	Juice of the stem used for <i>Tinea versicolor</i> , the inner powdery material applied on cuts and wounds.
62.	<i>Mentha arvensis</i> L. ZOR 16765	Pudina	Labiatae	H/CU	L	2	3	0.	Juice of the leaves good for burns and applied for warts.
63.	<i>Messua ferrae</i> L. ZOR 16803	Herhse	Guttiferae	T/WI	Se, Fr	2	2	1.	Seed oil for scabies and fruit juice applied for cuts
64.	<i>Mikania</i>	Japan hlo	Asteraceae	C/WI	L, Ap	2	3	0.	Ground leaves bandaged on

	<i>micrantha</i> Kunth. ZOR 16792							6	cuts, juice of the aerial parts used for washing hair to eliminate dandruff.
65.	<i>Milletia pachycarpa</i> Benth. ZOR 16764	Rulei	Leguminosae	S/WI	R	2	1	2.0	Juice of the ground roots mixed with water used for bathing in scabies and eczema or for dressing the affected area.
66.	<i>Miraabilis jalapa</i> L. ZOR 16750	Artukkhuan	Nyctagineae	S/CU	L,F	5	3	1.6	Decoction of leaves applied for pruritus, rashes due to food poisoning. Hot poultice of leaves applied on boils and inflammations. Juice of the flowers applied on septic sores.
67.	<i>Morus laevigata</i> Wall. ZOR 16728	Lungli	Moraceae	T/WI	La	2	2	1.0	Latex applied on cuts and wounds and dermatitis.
68.	<i>Musa paradisiacal</i> L. ZOR 16702	Balhla	Musaceae	SU/CU	Ts, St	3	2	1.5	Ground tender shoots applied on scabies and eczema, juice of the stem as homeostasis in cut and wounds.
69.	<i>Musa sylvestris</i> (Lour.) colla ZOR 16793	Changel	Musaceae	SU/WI	St	1	2	0.5	Juice of the stem used for dressing cuts and burns
70.	<i>Mussuenda glabra</i> Vahl. ZOR 16741	Vakep	Rubiaceae	S/WI	B, R	1	1		Juice of the bark and roots applied for sores.
71.	<i>Nicotiana tobaccum</i> L. ZOR 16794	Vaihlo	Solanaceae	S/CU	L	2	2	1.0	Juice of the crushed leaves applied on cuts, leaves bandaged upon boils.
72.	<i>Oroxylum indicum</i> Vent. ZOR 16729	Archangkawm	Bignoniaceae	ST/WI	R	2	3	0.6	Decoction of root bark applied for eczema and scabies.
73.	<i>Paederia</i>	Vawihuihh	Rubiaceae	C/WI	L	1	1		Juice of the ground leaves

	<i>scandens</i> (Lour)Merr. ZOR 16795	ru							applied on cuts and wounds.
74.	<i>Parkiana roxburghii</i> G.Don ZOR 16796	Zawngtah	Leguminosae	T/CU	Fr	5	3	1. 6	Outer layer of the fruits or pods is scrapped and applied on cuts, bed sore, scabies, eczema and burns.
75.	<i>Phyllanthus fraternus</i> Web. ZOR 16711	Mitthi sunhlu	Euphorbiaceae	H/WI	L	2	1	2. 0	Juice of the leaves applied on cuts and sores.
76.	<i>Piper bettle</i> L. ZOR 16797	Panhnah	Piperaceae	C/CU	L	2	2	1. 0	Ground leaves mixed with calcium chloride applied on burns and juice of the leaves applied for cuts.
77.	<i>Plantago major</i> L. ZOR 16742	Kelbaan	Plantagianaceae	H/WI	L, R	5	6	0. 8	Decoction of leaves used for dressing sores, boils, poultice of leaves and roots bandaged upon cuts and wounds. Juice of the fresh leaves applied on bee stings.
78.	<i>Pogonia plicata</i> (Roxb) Linl. ZOR 16798	Hnahkhat	Labiatae	H/WI	L, R	2	2	1. 0	Poultice of leaves applied on burns, Ground roots applied for dermatitis.
79.	<i>Polygonum chinense</i> L. ZOR 16782	Taham	Polygoniaceae	H/WI	St	1	1		Cut stem used for rubbing warts. This process is done regularly and eventually the wart disappears.
80.	<i>Pseudodrynaria coronans</i> Ching. ZOR 16751	Awmvel/Tuaibur	Polypodiaceae	E/WI	Rh	1	4	0. 2	Juice of the rhizome /ash of the rhizome applied on herpes zoster.
81.	<i>Psidium guajava</i> L. ZOR 16730	Kawlthei	Myrtaceae	T/CU	Fr, B	1	1		Juice of the Ripe fruits and bark applied on bed sore.
82.	<i>Rhus semialata</i>	Khawmh	Anacardiaceae	T/WI	TI	3	2	1.	Poultice of tender leaves

	Murr. 16799	ZOR a	eae					5	applied on dermatitis, sore and pruritus.
83.	<i>Roydsia suaveolens</i> Roxb. 16743	Theisawntlung	Capparidaceae	C/WI	L	1	1		Decoction of leaves applied twice a day for burns.
84.	<i>Salvia officinalis</i> L. ZOR 16712	Mawza par	Labiatae	H/CU	Wp	4	3	1. 3	Decoction of the whole plant applied for scabies, pruritus, eczema, sores.
85.	<i>Scenecio scandens</i> Buch.-Ham ex D.Don ZOR 16800	Saiekhlo	Asteraceae	H/WI	L	1	3	0. 3	Acts as a homeostasis in cuts and wounds, the crushed leaves are bandaged upon cuts.
86.	<i>Schima wallichii</i> (D.C)Korth. ZOR 16731	Khiang	Theaceae	T/WI	La, B	1	4	0. 2	Latex applied on cuts and wounds bark mixed with those of <i>Callicarpa arborea</i> are also applied on cuts and wounds.
87.	<i>Scoparia dulcis</i> L. ZOR 16805	Perhpawngchaw	Scrophulariaceae	H/WI	L	2	1	2. 0	Juice of the ground leaves applied on burns and cuts.
88.	<i>Securinega virosa</i> (Roxb.)Baill. ZOR 16771	Saisiak	Euphorbiaceae	ST/WI	L	4	5	0. 8	Decoction of leaves used for taking bath in case of scabies, eczema and measles. Juice of the crushed leaves applied for fresh cuts.
89.	<i>Smilax perfoliata</i> Lour. ZOR 16763	Kaiha	Liliaceae	S/WI	La	1	1	1	Latex applied on keloids.
90.	<i>Solanum anguivi</i> Lam. L. ZOR 16703	Samtawkte	Solanaceae	S/CU	Fr	2	4	0. 5	Paste of fruits applied for burns, herpes zoster.
91.	<i>Solanum tuberosum</i> Linn. ZOR 16752	Alu	Solanaceae	H/CU	Tu	1	3	0. 3	Ground tubers bandaged upon burns or peels of the boiled potato paste on the burnt area or

92.	<i>Solanum xanthocarpum</i> L. ZOR 16744	Athlo	Solanaceae	H/WI	R	2	3	0.6	bandaged upon the affected area so that the inner peel are facing the burnt skin. Decoction of roots applied on the infected area of scabies and boils.
93.	<i>Spondias pinnata</i> (L.)Kurz. ZOR 16772	Taitaw	Anacardiaceae	T/WI	B	1	1		Paste of the ground bark applied on cuts.
94.	<i>Strobilanthes flaccidifolius</i> (Nee)Imlay. ZOR 16773	Ting	Acanthaceae	S/WI	L	1	1		Decoction of leaves used for cuts and wounds.
95.	<i>Syzygium cumini</i> L. ZOR 16762	Lenhmui	Myrtaceae	T/WI	B	1	1		Decoction of 20gm of bark applied for pruritus.
96.	<i>Taegetes erecta</i> L. ZOR 16732	Derhken	Compositae	H/CU	L	4	3	1.3	Decoction of leaves applied on carbuncles, boils, pruritus and as homeostasis in cuts.
97.	<i>Tamarindus indicus</i> L. ZOR 16713	Tengtere	Leguminosae	T/CU	Se, L, Fr	3	2	1.5	Seeds attached to the skin to reduce itching due to bites from leech and certain insects. Ground leaves applied for boils, scabies, ripe fruits applied on cuts, juice of the leaves used for curing sunburns.
98.	<i>Tectonia grandis</i> L. ZOR 16761	Teak	Verbenaceae	T/CU	B	3	2	1.5	Decoction of barks applied for Tinea versicolor, scabies and eczema.
99.	<i>Trichosanthes anguina</i> L. ZOR 16769	Berul	Cucurbitaceae	C/CU	La	1	1		Latex of fruit applied on affected area of snake bite.
100.	<i>Drymeria</i>	Changkalri	Carrizophyll	H/WI	Wp	1	1		Poultice of the plant applied on

	<i>cerdates</i> 16774	ZOR t		aceae						boils.
101.	<i>Uncaria laevigata</i> Wall.ex G.Don. ZOR 16753	Ralsamkua i		Rubiaceae	C/WI	R	1	1		Juice of the ground roots applied for herpes zoster.
102.	<i>Woodfordia fruticosa</i> Kurz. ZOR 16745	Ainawn		Lythraceae	S/WI	Sb	1	1		Decoction of stem bark taken for leprosy and erysipelas.
103.	<i>Wrightia tomentosa</i> Roem&Schult ZOR 16704	Hleng		Apocyanaceae	T/WI	R, B, La	3	2	1.	Decoction of roots and barks used for dressing snake bites and scorpion stings, latex as homeostasis in cuts
104.	<i>Zea mays</i> L. ZOR 16718	Vaimim		Graminae	S/CU	Co	2	3	0.	Poultice of the corn applied for skin ulcers and pruritus.
105.	<i>Zingiber officinale</i> Roxb. ZOR 16733	Sawhthing		Zingiberaceae	H/CU	Rh, L	3	2	1.	Applied on the affected of insect bites, decoction of leaves used for dressing dermatitis. Rhizome mixed with calcium chloride used to rub on the affected area of warts.

Where, $\sum UV_i$ = No. of uses, i_s = No. of informants, UV_s = Used Value, WI = Wild, CU=Cultivated, H = Herb, S=Shrub, T = Tree, C = Climber, ST = Small tree, SU = Succulent, Ba = Bamboo, E = Epiphyte, L = Leaves, Rs = Root stock, Cl = Cloves, Rh = Rhizome, La = Latex, Wp = Whole plant, Ap = Aerial part, B = Bark, Ts = Tender stem, F = Flower, Fr = Fruit, St = Stem, Se = Seed, R = Root, Tl = Tender leaves

Skin problems were grouped into 16 different main groups and Informant consensus factor was calculated (**Table. 2**). Burns got the highest ICF values (0.77). 3 species of plants were used for herpes cited by 10 informants likewise for burns 17 species of plants are used cited by 10 informants. In case of dandruff and skin pigmentation the ICF value is zero. ICF value ranges from 0.00 to 1.00, high ICF values are obtained when only one or a few plant species are reported to be used by a high proportion of informants to treat a particular ailment, whereas low ICF values indicate that informants disagree over which plants to use. High ICF values can thus be used to pinpoint particularly interesting species for the search of bio-active compounds. It also indicates the uniformity of the knowledge shared between the informants and low values indicates that the informants did not share their knowledge regarding this treatment.

Table 2: Informants Concensus Factor

Sl.No.	Disease category	Nur	Nt	ICF
1.	Allergies	10	7	0.33
2.	Boils	11	20	0.90
3.	Burns	10	17	0.77
4.	Cuts and wounds	35	43	0.23
5.	Dandruff	5	5	0.00
6.	Dermatitis	10	7	0.33
7.	Eczema	21	20	0.05
8.	Herpes	10	3	0.77
9.	Insect/ animal bites	15	13	0.14
10.	Measles	3	2	0.50
11.	Pruritus	14	13	0.07
12.	Ringworm,Tinea versicolor	9	11	0.25
13.	Scabies	15	23	0.57
14.	Skin pigmentations	2	2	0.00
15.	Sore	40	34	0.15
16.	Warts, keloids and splinters	9	10	0.12

Nur = No. of use citations, Nt = No. of plant species used, ICF = Informants consensus factor.

41 (31 men and 10 women) informants were interviewed in which 13 were key informants (**Table 3**). The surveys show that most of the informants were farmers which make them to rely more on traditional medicines. The informants with age group 51-60 years are found to be more knowledgeable regarding this traditional medicine. However the women folk and some younger

generations are also found to access this traditional healing technique from their ancestors.

Table 3: Demographic profile of the respondents

No. of informants: 41		
	Male	Female
Gender	31	10
Age groups	31-40 = 5	31-35 = 1
	41-50 = 10	41-50 = 4
	51-60 = 11	51-60 = 3
	61-70 = 2	61-70 = 2
	71-80 = 3	71-80 = 0
Education	Illiterate = 4	Illiterate = 1
	Primary = 18	Primary = 7
	HSLC = 6	HSLC = 2
	Graduate = 3	Graduate = 0
	Post Graduate = 0	Post Graduate = 0
Occupation	Farmer = 30	Housewives = 9
	Govt. employee = 1	Govt. employee = 1
	Traders = 0	Traders = 0
Religion	Christian = 27	Christian = 10
	Buddhist = 4	

Leaves are the most common plant part used for making medicines followed by latex (Figure 3). In all herbs were highly utilized (37 species) followed by trees (27 species), shrubs (27 species) and climbers (9 species) (Figure 4). The medicines were all administered externally, the drug formulations are usually in the form of paste, powder, decoction, juice, extracted seed oil, exudates, ash and poultice (Figure 5). Treatments are done mostly with single plants and in some cases mixture with another plant species, ghee and water are used.

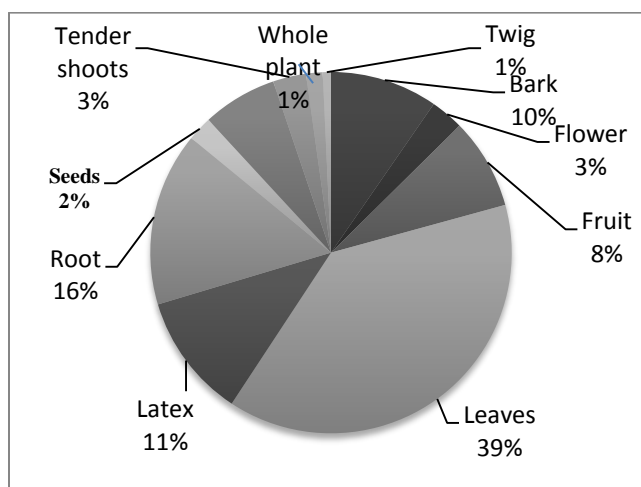


Figure 3: Percentage usage of plant parts

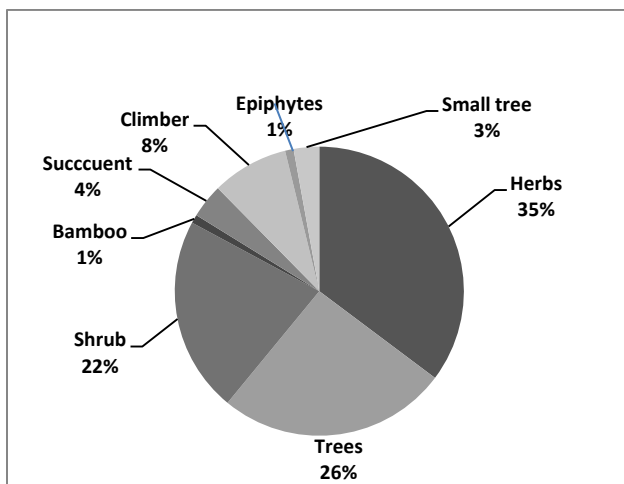


Figure 4: Habit wise representation of the medicinal plants

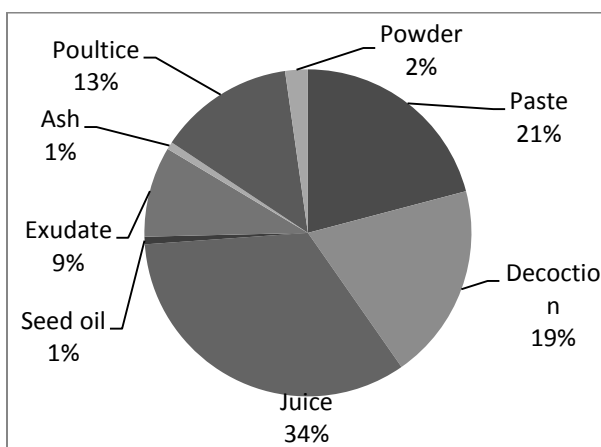


Figure 5: Percentage of drug formulation used.

CONCLUSION

Mizoram housed a vast knowledge of medicinal plants for the treatment of many diseases. Rural areas of Mizoram are having more knowledge on medicinal plants than urban areas; this might be due to their remote location, lack of facilities, underdeveloped community and poor transportation. However due to lack of awareness, shifting cultivation and illegal trading of resources the medicinal plants are disappearing day by day and so is the knowledge about such practice. Therefore it is a high time to update research and validate medicinal plants properties for further investigations.

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