

## **Ethnomedicinal Plants Used For Skin Ailments In The Upper Shivaliks Of Kathua District, J&K (India).**

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### **Abstract:**

**Background:** Ethno-medicine is an offshoot of ethnobotany wherein traditional medicines are used by various ethnic groups. Ethno-medicine is a direct and simple approach that leads to the development of new medicines. This branch of science covers a healthcare system that includes treatments, beliefs and practices related to human diseases and health. Large number of medicinal plants are used in traditional system of medicines for the treatment of skin diseases. The objective of present study was to enumerate the plant species traditionally used for the treatment of skin diseases in Shivaliks of Kathua district.

**Materials and Methods:** During the current study, 05 villages of upper Shivaliks of Kathua district were explored. A total of 56 (17 female and 39 male) informants were interviewed using questionnaire method.

**Results:** Study resulted in documentation of 44 angiospermic and 1 pteridophytic plant species, belonging to 30 families that were being used to cure skin ailments. Highest number of plants were recorded from family Asteraceae, Meliaceae, Lamiaceae and Apocynaceae (3 species each). The medicinal plants used were herbs (19) followed by trees (13) and shrubs (12). Among plant parts, leaves (63%), latex and fruit (9%), flower (7%), root and bark (4%) and gum & cloves (2%) are used as ethnomedicinal drug for skin ailments.

**Conclusion:** The study revealed that locals of upper Shivaliks of Kathua district have good knowledge of ethnomedicinal plant species used for the treatment of skin ailments.

**Key words:** Ethnobotany; Ethnic; Traditional medicine; Questionnaire; Skin ailments.

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### **I. Introduction**

Prevailing in proximity to nature, man has inspected several plants. Based on their observations, they differentiated plants that are used predominantly for the sake of food, economic assistance and well being. Over the period, they have accumulated this trial and error based traditional knowledge (TK). TK generated is passed from leading to the succeeding generation through verbal dialogue or by scripts. Written records on plants used for various human and animal ailments in India, can be traced back to earliest Hindus manuscript, "Rigveda" (4500-1600 B.C.) (Jain, 1991). Later on "Ayurveda" and "Athrvaveda" continued this practice of documentation of Indigenous medication system of Indian culture (Acharya and Shrivastava, 2008). Other manuscripts such as de Materia Medica, Charaka Samhita, Susruta Samhita and Doctrine of Signature also have the voluminous work on medicinal plants (Acharya and Shrivastava, 2008). Being an important source of medicines, these plants are used by various ethnic groups as ethnomedicine.

Ethnomedicine plays a key role in the deterrence and treatment of innumerable ailments of ethnic and tribal groups. Extent of ethnomedicine depends upon plant diversity as well as the respective TK (Maheshwari, 2000). Transmission of traditional knowledge among people was started from Vedic era. People have revealed various methods of transfer of TK like written literature, rock carving, and archaeological remains, oral traditional knowledge (OTK) (Jain & Jain, 2015). The ethnic and tribal groups have repository of experience and knowledge of their surrounding plant communities. Based on which they have developed their own indigenous beliefs, customs, religious rites, folk tales, medicinal skill and practices. The sensible use of traditional medicine has shown the miraculous effects on patient's well being (Ravishankar and Shukla, 2007). Ethnomedicine utilize mostly plants-based preparation and is considered as the primary source of health care to 3/4<sup>th</sup> of world population (Acharya and Shrivastava, 2008). The World Health Organization (WHO) has estimated that about 80% of rural population in developing countries is dependent on traditional medicines for health care system (Anonymous, 2003).

Skin, being the external and biggest organ of human body has many functions like percutaneous absorption, thermoregulation, sensory and secretory. Skin state indicates morbid or good health of a person and is attributed to the environmental condition, chemical agents, pathogen, auto-immune response etc. It is assessed that skin diseases become a very common ailments, that cause harm to all ages from neonate to elder one. Medicinal plants either as whole or in the form of formulations are used to cure cuts, wounds, boils and other

disorders of skin. After seeing the importance of medicinal plants for skin, ethnobotanists have documented many plants which are used by the people to cure different kind of skin problems. viz:-Sharma et al., 2013 has documented 109 medicinal plants which are used by Gujjar tribe of Sub-Himalayan tract in Uttarakhad, Balaraju et al; 2015 has documented 21 plant species belonging to 15 families from tribal of Mahabubnagar, Telangana state, Suneetha and Reddi., 2015 has documented 67 plants from 36 families from East Godavari district, Andhar Pardesh and Gupta and Gupta., 2018 has documented 75 medicinal plants from Bolod district, Chhatisgarh, India for curing various skin ailments like cut, wound, allergy etc.

## II. Methodology

### Study area and ethnographic background

Western Himalaya is one of the biodiverse provinces of the Indian Himalayan Region (IHR). It is generally categorized into three sub-divisions (viz. Greater Himalaya, Lesser Himalaya and Shivalik's). Shivaliks, being outer and semi-arid part of Himalaya, support thorny and sub-tropical vegetation (Yadav et al., 2015). Kathua is a part of outer range of small hillocks of Jammu Shivaliks flanked in an area of 2651 km<sup>2</sup> between 32°17' to 32°55' North Latitude and 75°07' to 76°17' East with the hostile environment. It has a population of 616435 lacs and is surrounded by Jammu and Udhampur district in the North-west and North respectively, Himachal Pradesh in the east, Punjab in the South and Pakistan in the West region (Kumar and Bhagat, 2012). It is characterized with alluvial northern plains towards south and Shivaliks followed by Lesser Himalaya towards north. Therefore, climatic condition of Kathua ranges from subtropical to temperate. It is characterized by hot summer and dry winters with average temperature in summer about 39°C and winter about 18°C. Ethnobotanical surveys were conducted in 5 different villages namely Barwal, Logate, Hatli, Jasrota and Patayari spanning more than a year study.

### Data collected

Ethnobotanical data on the medicinal plants, used for various skin disorders, were collected (2017-18) from 5 villages of Kathua in jammu Shivaliks. TK on the skin ailments was collected from local informants and health practitioners. An intensive survey was conducted periodically to get maximum information and to cross-check the information provided during earlier visits. Plant specimens having medicinal value were collected, pressed and dried using blotting papers and then mounted on herbarium sheets using standard methods. Plant specimens were identified using standard literature and deposited in the Herbarium of Department of Botany, University of Jammu, Jammu, (Nasir and Ali, 1970; Sharma and Kachroo, 1983; Polunin and Stainton, 1984).

### Data analysis

Ethnobotanical data collected through semi structured questionnaire were quantified by calculating use value (UV).

The use value (UV) is a quantitative measure to calculate the relative importance of the species known locally (Phillips *et al.*, 1994).

$$UV = \sum u/n$$

Where *u* is the number of use reports cited by each informant for a given species. *n* is the total number of informants. High use value means many use reports for a plant, indicating that plant is important. Approaching zero, use value indicates that there are few reports related to use of taxa. (Bhatia *et al.*, 2014).

## III. Result

TK on skin ailments was collected from local respondents and herbal healers, living in 5 villages of Kathua in Jammu Shivaliks. The study consists of 56 informants (17 females and 39 males), which were interviewed using semi-structured questionnaire. Based on age, the informants were classified into 6 different age groups viz., 25-34 yrs 5(8.9%), 35-44 yrs 8(14.2%), 45-54 yrs 10 (17.8%), 55-64 yrs 13 (23.2%), 65-74 yrs 16(28.5%) and above 75yrs 4(7.14%) (Table-1) indicated that 21(37.5%) informants have never attended school, of which 38.4% were females and about 35.2% were males. Therefore, data reveals that 56.2% of the females and about 64.3% of the males were literate, whereas 2 females (1.9%) of the total informants were post graduate (Table-1).

### Plant details

A total of 44 plant species (43 angiosperms and 01pteridophyte) belonging to 30 families (Fig. 1) were used by informants to treat skin diseases in the study sites (Table-2). The medicinal plants were herbs (19), trees (13) and shrubs (12) (Fig.2). Among plant parts, leaves of 28 species (63%), latex and fruit of 08 species (9%), flower of 04 species (7%), root and bark of 03 species (4%) and gum & cloves of 01 species (2%) are used as ethnomedicinal drug for skin ailments (Fig. 3). UV is a quantitative measure to determine importance of species in ethnomedicine system. High UV determines the high use of the species and greater acceptability of

the species for the treatment among the people. In the current study *Azadirachta indica* A. Juss (0.44), *Aloe vera* (L.) Burm.f. (0.19) were among the topmost used plants in the area, where as *Achyranthus aspera* L. *Allium sativum* L., *Colebrookea oppositifolia* Sm., *Ficus religiosa* L. with *UV* 0.01 were the least used plants for the treatment. Therefore, it can be inferred from the study that the knowledge related to the high *UV* plants is more likely to occur in the area and information on plants can be readily disseminated among the respondents.

#### IV. Discussion

The existing study revealed that 44 plant species are used to treat skin related diseases in the 5 villages (Barwal, Logate, Hatli, Jasrota and Patayari) of Kathua. Out of the total informants (56), maximum respondents (16) were between the age-group of 65-74 years. The high reliability of the older generation over the traditional method is due to their experiences with the plants and easily availability of the plant resources. Whereas low acceptance of the traditional plants to cure different ailments among younger generation is due to the easy availability of modern drug or less familiarity of traditional knowledge. The finding is in consonance with the observation of Yineger et al., (2008); Bhatia et al., (2014) and Dutt et al., (2015). According to these workers the erosion of OTK from older to younger generation is a common phenomenon. Young informants have high acceptability to modern drug. On the other hand, older generation still have enough quantity of traditional knowledge (Emmanuel and Didie, 2011; Dutt et al., 2015 and Kumar et al., 2015).

Study also revealed that maximum medicinal plants used by the informants were from Lamiaceae, Asteraceae, Meliaceae and Apocynaceae (3 taxa each) (Fig1). Dominance of medicinal plant from these families indicated usefulness of their essential oils. Herbal wealth is more prominently used for medicinal purpose as compared to trees and shrubs (Fig. 2). This observation is in line with Ahmed and Ajaz (2017). It was also seen that the leaves were preferred mainly as a plant part which is in consonance with observation of Castillon et al., 2014. The high use of leaves may be due to high accumulation of important biomolecules, effortless portability, ease of storage and use (Dutt et al., 2015). OTK obtained from the informants in the study area was authenticated by using *UV*. It was found that *Azadirachta indica* A.Juss (*UV*=0.44) and *Aloe vera* (L.) Burm.f (*UV*=0.19) have maximum value i.e these plant species are highly preferred by the informants. On the other hand, minimum *UV* showed either the plant species are rarely used by the informants or OTK on these plants is not passed to the next generation. Sharing of traditional knowledge among the local people of study area depend on the reliability of outcomes that they observe during the usage of medicinal plants.

#### V. Conclusion

Plants have a tremendous role to play in human being as they are the ultimate source of food, medicine and other possessions. The use of plants by human as a resource can be traced back to the rock age as this knowledge was gradually passed from one generation to next by various ethnic groups in the world. The existing study was carried out in Kathua district of outer Shivaliks to determine traditional knowledge on medicinal plants which were being used to cure different skin ailments. The inhabitants of the 5 villages have respectable knowledge of medicinal plants existing in their vicinity. A total of 44 medicinal plants have been reported from the study area, of which several reports are new to the science. The findings from the study can be used to search for phytochemistry and pharmacology of new compounds and as we know Ethnomedicinal researches are done for the development of plant derived drugs. By using present data, we can start search for phytochemistry and pharmacology of new compounds and develop new drugs for the human welfare. Therefore, these OTK should be recorded in danger of being lost.

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**Informants**

Female	39(69.6 %)		
Male	17(30.3%)		
<b>Age – group</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
25-34	3(7.6%)	2(11.7%)	5(8.9%)
35-44	5(12.8%)	3(17.6%)	8 (14.2%)
45-54	7(17.9%)	3(17.6%)	10(17.8%)
55-64	9(23.07%)	4(23.5%)	13(23.2%)
65-74	11(28.2%)	5(29.4%;)	16(28.5%)
75-above	4(10.2%)	-	4(7.14%)
<b>Education level</b>			
Never attended school	15(38.4%)	6(35.2%)	21(37.5%)
Attended school for 1-5 classes	8(20.5%)	5(29.4%)	13(23.2%)
Attended school for 6-10 classes	6(15.3%)	3(17.6%)	9(16.07%)
12 <sup>th</sup> class	5(12.8%)	2(11.7%)	7(12.5%)
Graduate	3(7.6%)	1(5.8%)	4(7.14%)
Post – graduate	2(5.12%)	-	2(3.5%)

**Table: 1** Demographic profile of the informants

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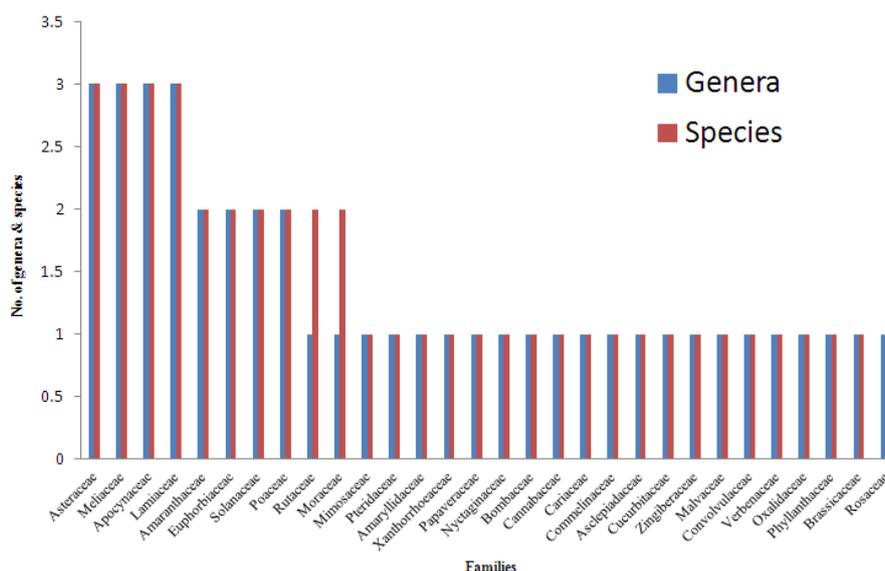
S No	Botanical Name/Family/Acc.No	Local name	Plant part	Habit	Method of preparation of drug and use report	Total Use report	Use value
1.	<i>Acacia nilotica</i> (L.) Delile Mimosaceae HBJU15940	Kikar	Leaves and bark	Tree	30gm bark of the species and 30 gm leaves of mango are boiled in 500 ml of water. Vapours formed during boiling are collected and condensed. The condensed water is applied on the microbial infected portion of the skin which is then covered with butter(2). Bark is shade dried, powdered and mixed with water to get an ointment to be applied on wounds (1) and inflamed gums (2). Same ointment when mixed with neem leaves is applied to cure skin allergies (3).	8	0.14
2.	<i>Achyranthes aspera</i> L. Amaranthaceae HBJU15941	Puthkanda	Leaves	Herb	Paste of shade dried leaves is applied on bleeding wound (1).	1	0.01
3.	<i>Adiantum curvatum</i> Kaul. Pteridaceae HBJU15943	Kronkal	Whole plant	Herb	Paste of whole plant is applied externally to cure skin fungal disease known as-“Kalbtra”(1).	1	0.01
4.	<i>Ageratum conyzoides</i> (L.)L. Asteraceae HBJU15945	Jdi	Leaves	Herb	Leaf extract is applied on skin infection (2).	2	0.03
5.	<i>Allium sativum</i> L. Amaryllidaceae HBJU15947	Thom	Cloves	Herb	Cloves paste is applied on the infected nails (1).	1	0.01
6 .	<i>Aloe vera</i> (L.) Burm.f. Xanthorrhoeaceae HBJU15948	Kwargandal	Leaves	Herb	Peel out outer thick layer of leaves to get inner thick mass. Mix it with honey and applied on sun burns (3) and acne (3). Leaf extract along with lemon juice is applied on scalp for 30 minutes, to cure hair dandruff (5).	11	0.19
7.	<i>Argemone mexicana</i> L. Papaveraceae HBJU15950	Peelikandari	Leaves	Herb	Leaves extract is applied on ring worm (3).	3	0.05
8.	<i>Azadirachta indica</i> A.Juss Meliaceae HBJU15953	Neem	Leaves and bark	Tree	Decoction of shade dried bark is administered to cure gum inflammation (5). Leaf paste mixed with lemon juice is applied on scalp to get relief from dandruff (4). Soaked cotton ball in neem water is wiped on skin during bed time (1). Leaf paste is applied on face to remove acne (7). Paste of neem leaves and wheat flour is applied on face to remove blackhead(2). Leaf extract is applied on fungal infected nails (2) and ringworm (4).	25	0.44
9.	<i>Boerhavia diffusa</i> L. Nyctaginaceae HBJU15956	Itsit	Leaves	Herb	Leaf extract is used to cure eye inflammation (1).	1	0.01
10.	<i>Bombax ceiba</i> L. Bombaceae HBJU15957	Simbal	Leaves	Tree	Leaves paste is applied on skin infection (2).	2	0.03
11.	<i>Calotropis procera</i> (Aiton) Dryand Apocyanaceae HBJU15960	Desi aak	Latex and leaves	Shurb	Latex is applied to cure ring worm (1). Leaves are boiled in mustard oil, for 20-25 minutes and oil is applied on wounds to heal injuries (4). Paste of leaves along with turmeric is applied on the injuries (2).	7	0.12
12.	<i>Cannabis sativa</i> L. Cannabaceae HBJU15961	Bhang	Leaves	Shrub	Leaf paste with honey is applied on acne (1). Leaf decoction mixed with lemon juice is applied on scalp to remove dandruff (1).	2	0.03
13.	<i>Carica papaya</i> L. Caricaceae HBJU15962	Papita	Fruit	Tree	Fruit extract is applied under eye to remove dark circles (4) and mixed with lemon juice is applied on wrinkles during bed time (3).	7	0.12

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14.	<i>Catharanthus roseus</i> (L.) G.Don Apocynaceae HBJU15965	Sadabhar	Leaf	Shrub	Leaf paste is applied over abscess(1).	1	0.01
15.	<i>Citrus limon</i> (L.) Osbeck Rutaceae HBJU15969	Nimbu	Fruit	Tree	Mixture of lemon juice, curd and coconut oil is applied on scalp to remove dandruff (6). Cut lemon is rubbed on face to brighten skin (1) and lemon juice mixed with honey is applied on skin to make it soft (2).	9	0.16
16.	<i>Citrus medica</i> L. Rutaceae HBJU15970	Gargal	Leaves	Tree	Extract of leaves boiled in coconut oil for 30 minutes is applied on throat to cure tonsillitis (4).	4	0.07
17.	<i>Colebrookea oppositifolia</i> Sm Lamiaceae HBJU15972	Chittisuali	Leaves	Shrub	Pre soaked leaves in hot mustard oil are applied on wound to heal injuries (2).	2	0.03
18.	<i>Commelina benghalensis</i> L. Commelinaceae HBJU15974	Chura	Leaves	Herb	Leaf paste is applied to cure eye inflammation (1).	1	0.01
19.	<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida Asclepiadaceae HBJU15976	Kali terni	Latex	Herb	Latex is applied to cure ring worm (3).	3	0.05
20.	<i>Cucumis sativus</i> L. Cucurbitaceae HBJU15977	Kheera	Fruit	Shrub	Slice of fruit is put on closed eye lid to remove dark circles (5).	5	0.08
21.	<i>Curcuma longa</i> L. Zingiberaceae HBJU15978	Haldi	Rhizome	Herb	Fine paste of dried rhizome powder is applied on skin to remove facial scars (1).	1	0.01
22.	<i>Erigeron canadensis</i> L. Asteraceae HBJU15984	Jari	Leaves	Herb	Leaf extract is applied on wounds (1).	1	0.01
23.	<i>Ficus benghalensis</i> L. Moraceae HBJU15988	Borh	Leaves and gum	Tree	Leaves paste is applied on cut and wounds (1). Paste of crushed leaves mixed with honey is applied on skin infection (2). Paste of mixture of dried gum and black pepper is used to treat gum inflammation (3).	6	0.10
24.	<i>Ficus religiosa</i> L. Moraceae HBJU15989	Peepal	Leaves	Tree	Leaves extract mixed with haldi powder and applied on boils and acne (1).	1	0.01
25.	<i>Gomphrena globosa</i> L. Amaranthaceae HBU15990	Chittijdi	Flower	Herb	Flower paste is applied to treat eye inflammation (1).	1	0.01
26.	<i>Hibiscus rosa-sinensis</i> L. Malvaceae HBJU15993	Gudaal	Flower	Shrub	Leaves are boiled in mustard oil and that oil is then applied on bald patches (3).	3	0.05
27.	<i>Ipomoea pes-tigridis</i> L. Convolvulaceae HBJU15996	Panjabel	Leaves	Herb	Leaf paste is applied on acne (4).	4	0.07
28.	<i>Jatropha curcas</i> L. Euphorbiaceae HBJU15997	Phloos	Latex	Herb	Latex is applied on wounds (2).	2	0.03
29.	<i>Lantana camara</i> L. Verbenaceae HBJU15999	Panjphulli	Latex	Shrub	Latex is applied on bald patches (2).	2	0.03
30.	<i>Lycopersicon esculentum</i> Mill. Solanaceae HBJU16000	Tamatar	Leaves and fruit	Shrub	Leaf paste is directly applied to treat ring worm (2). Fruit slice is rubbed on face to remove blackheads (2). Mixed paste of fruit and mint leaves is applied on face to get fair skin (3).	7	0.12
31.	<i>Mallotus philippensis</i> (Lam.) Mull.Arg. Euphorbaceae HBJU16001	Kamla	Leaves	Tree	Extract out juice of fresh leaves and applied it on skin infection (1).	1	0.01
32.	<i>Melia azedarach</i> L.	Darak	Leaves	Tree	Leaves are roasted in coconut oil and	4	0.07

	Meliaceae HBJU16003				remaining oil is applied on scalp to check dandruff (4).		
33.	<i>Mentha arvensis</i> L. Lamiaceae HBJU16004	Pootna	Leaves	Herb	Apply fine paste of fresh leaves on pimples (5).	5	0.08
34.	<i>Nerium oleander</i> L. Apocynaceae HBJU16012	Kenari	Leaves	Tree	Leaf paste is applied on burns and wounds(2).	2	0.03
35.	<i>Ocimum tenuiflorum</i> L. Lamiaceae HBJU16014	Tulsi	Leaves	Herb	Leaf paste with honey is applied on itching skin (3). Leaf paste mixed with lemon juice is applied on scalp to remove dandruff (2).	5	0.08
36.	<i>Oryza sativa</i> L. Poaceae HBJU16015	Chawal	Seeds	Shrub	Paste of uncooked rice is applied to cure tonsillitis (2). And on face to get fair skin (2).	4	0.07
37.	<i>Oxalis corniculata</i> L. Oxalidaceae HBJU16016	Khattibuti	Leaves	Herb	Leaf extract is applied on eyes to cure eye inflammation (2).	2	0.03
38.	<i>Phyllanthus emblica</i> L. Phyllanthaceae HBJU16017	Amla	Leaves	Tree	Leaves extract is applied on pimples (3).	3	0.05
39.	<i>Raphanus raphanistrum</i> subsp. Sativus (L.) Domin Brassicaceae HBJU16022	Mulli	Roots	Shrub	Paste of dried roots is applied on infected skin (4).	4	0.07
40.	<i>Rosa indica</i> L. Rosaceae HBJU16025	Gulab	Flower	Shrub	Paste of fresh rose flowers is applied on facial scars (4).	4	0.07
41.	<i>Solanum americanum</i> Mill. Solanaceae HBJU16027	Peelkan	Leaves	Herb	Leaf extract is applied on pimples (2).	2	0.03
42.	<i>Toona ciliata</i> M. Roem Meliaceae HBJU16036	Toon	Leaves	Tree	Leaves paste is applied on skin infections (2).	2	0.03
43.	<i>Tridax procumbens</i> (L.) L. Asteraceae HBJU16037	Kumra	Leaves	Herb	Leaves paste is applied on skin allergy (2).	2	0.03
44.	<i>Triticum aestivum</i> L. Poaceae HBJU16038	Gehu	Seeds	Shrub	Paste of grinded seeds is rubbed on dead skin (2).	2	0.03

**Table: 2** Name of the plant used as ethnomedicinal species and their use with use value



**Fig 1:** Families of reported ethnomedicinal plants for skin ailments.

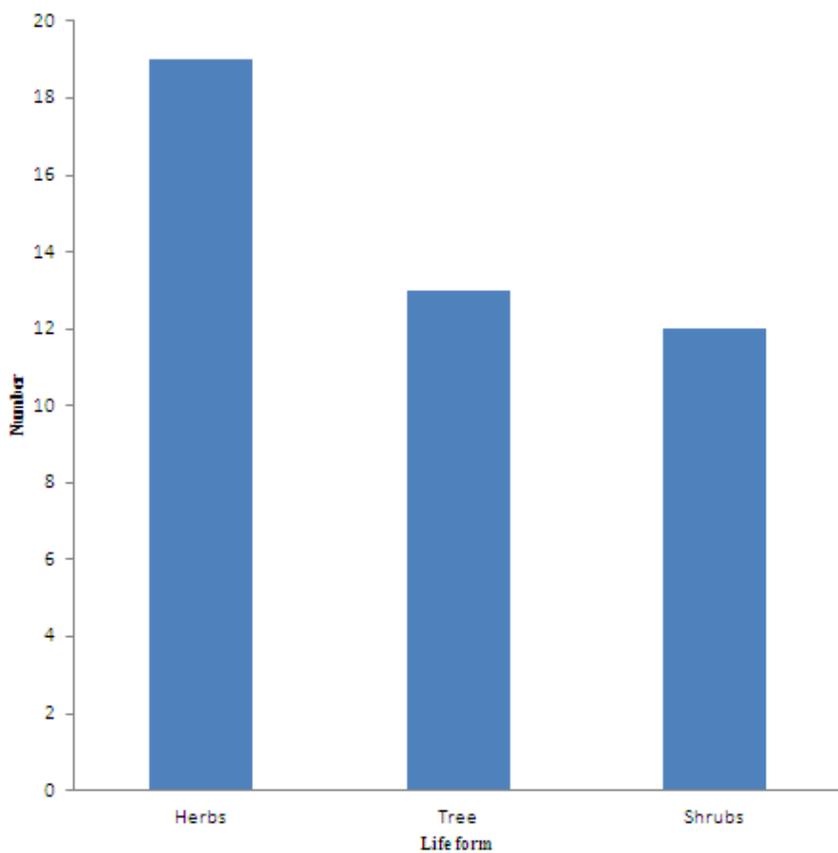


Fig 2 : Life forms (Habits) of the reported Ethnomedicinal plant species

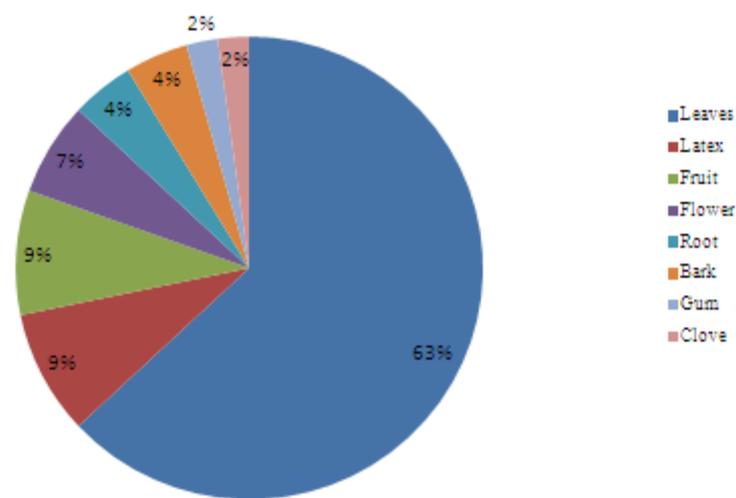


Fig 3: Percentage (%) of plant parts used as ethnomedicine for skin ailments