



## TRADITIONAL PHYTOTHERAPY USED BY BHUTIA COMMUNITY OF UTTARKASHI DISTRICT OF UTTARAKHAND FOR DERMATOLOGICAL DISORDERS

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**ABSTRACT** Ethno-medicinal survey was undertaken from traditional healers of Bhutia tribal community of Uttarakashi district for the use of medicinal plants in the treatment of different skin diseases such as dog and insect bite, burns, eczema, abscesses, scabies, ringworm, cuts and wounds, boils, leprosy, blisters, allergy, itching, pimples, leucoderma, prickly heat, warts, septic ulcers, and other skin diseases during different season of March 2016 to May 2017. The indigenous knowledge of tribal traditional healers having practical knowledge of plants in medicine were interviewed in five villages of Uttarakashi district of Uttarakhand and plants used for medicinal purposes were collected through questionnaire and personal interviews during fieldtrips. A total of 60 plant species of 43 families are documented in this study. The medicinal plants used in the treatment of skin diseases by tribal's are listed with botanical name (in binomial form), family, local names, habit, availability, parts used, and mode of preparation. This study showed that Bhutia tribal people in the studied parts of Uttarakashi district continue to depend on the medicinal plants at least for the treatment of primary healthcare.

**KEYWORDS :** Bhutia tribe; Traditional knowledge; Dermatological disorders; Medicinal plants; Uttarakashi; Uttarakhand.

### INTRODUCTION

Herbal medicine refers to the use of herbs for their medicinal value. A herb is a plant or a plant part valued for its medicinal, aromatic or savoury qualities. Usually, herbalists use leaves, flowers, stem, berries, seeds, whole plant and roots of plants to prevent, relieve, and treat illness. Historically, herbal medicine is the oldest form of health care that had been used by all cultures. Throughout the middle ages, homegrown botanic are the only medicines readily available and for centuries, no self-respecting household would be without a carefully tended and extensively used herb garden. In most parts, herbal healing was passed from generation to generation by means of children being taught by their mothers (Shizha and Charema, 2011). People through their exploration, conquest and most importantly, the desire to aid the sick, ancient civilizations tended to borrow and adopt the skills, knowledge of medicine and healing of various cultures to their own (Sumner, 2000).

The knowledge of medicinal plants has been accumulates in the course of many centuries based on different medicinal systems such as Ayurveda, Unani, and Siddha. During the last few decades, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world (Lev, 2006). Documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources. In traditional systems, the plants have been used in successful management of various disease conditions like respiratory tract infection, gastrointestinal problems, dermatological disorders, and in the treatment of hepatic and cardiovascular disorders (Sen, 1993).

The knowledge of tribes has, associated with the traditional healing practices, using wild plants, is now fast disappearing due to modernization and the tendency to discard their traditional life style and gradual migration to the main stream. There is an urgent need to study and document the precious knowledge for posterity. According to World Health Organization, more than 80 % of the world's population relies on traditional herbal medicine for their primary healthcare. In view of exploitation and conservation of tribal knowledge, an attempt has been made to study the ethno-medicinal aspects of Uttarakashi district in Uttarakhand. The major aim and objective of the present study is to highlight the traditional uses of some medicinal plants in Uttarakashi district for the treatment of skin diseases.

### MATERIALS AND METHODS

#### Study Area

The study area of the present work is located at the Uttarakashi district near Gangotri shrine. Five locations dominated with the Bhutia tribal community and plants utilized by them for dermatological disorders

were identified for the present study. Geographically these sites were located at 30° 44' to 30° 56' N latitude and 79° 02' to 78° 42' E longitude at an altitudinal range of 2300 m to 2700 m asl. The soil of the study sites is slightly acidic (pH 5.5-6.5) and sandy loam, mixed with gravels. The main forest associates were *Hippophae silicifolia*, *Cedrus deodara*, *Betula utilis*, *Rosa webbiana*, *Juniperus macropoda*, *Cotoneaster* spp., etc. The data of rainfall, atmospheric temperature, relative humidity and solar radiation were also recorded by automatic rain gauge, automatic thermo hygrograph and solarimeter respectively. The meteorological data were recorded at the study sites, revealed that maximum average temperature of the hottest month i.e., June was 21.20C and minimum average temperature of the coldest month i.e., January was -3.40C and relative humidity ranges from 23-100 percent. Annual precipitation received by the area during the study period was 910 mm. Being a dry temperate zone, this area received very little rainfall. Maximum rainfall was found in the month of July. Hailstones were very common during winter months in this area during the winters, from November to March, whole study area remains covered by thick blanket of snow.

The Bhutia tribal community of the study area prefers traditional medicinal practice to the modern medicinal system because they know more about the medicinal plants which are easily available in their locally area and herbal formulations are comparatively cheaper and free from the side effects. The Bhutia tribal community of the study area is not exception to the present stream of modernization and traditional medicinal practice seems to be disappearing among the ethnic communities of the study area. As indigenous knowledge on usages of medicinal plants is transmitted without any systematic process, and younger generations of the communities are not interested in traditional healing system because it has no/very little scope for money, so they engage themselves in other occupations.

#### Local Traditional Healers

Local traditional healers of Bhutia tribal community having practical knowledge of plants in medicine, were interviewed in five villages (Sukki, Jhala, Bagori, Dunda, and Birpur) of the district during March 2016 to May 2017. During the course of the study, three field trips were carried out in the study area. Method of selecting informants depends upon the distribution of local people having folk knowledge. They were requested to collect specimens of the plants they know or to show the plant species on site. These informants were traditional healers themselves or had tradition of healing in their families and had knowledge of the medicinal use of plants. The wealth of medicinal plant knowledge among the Bhutia tribe of this district is based on beliefs and observations. This knowledge has been transmitted orally from generation to generation, however it seems that it is vanishing from the modern society since younger people of Bhutia tribal community is not interested to carry on this tradition.

### Interview With Traditional Healers

Adopting the methods of Martin (1995) ethno-medicinal data was collected through general conversation with the informants. The questionnaires were used to have information on medicinal plants with their local names, habit, wild or cultivated, availability, parts used, mode of preparation, and use.

A total of 20 informants were identified between the ages of 31 to 72. They were selected based on their knowledge of medicinal plants either for self medication or for treating others.

Informants were asked and requested to come to field with us and show the plants with local name, the species mentioned by the informants were taxonomically identified.

### Preservation Of Plant Specimens

The collected plant specimens were brought to the college laboratory and processed for herbarium preparation following (Rao and Sharma, 1990; and Woodland, 1997) and identified with the help of available specimen at FRI Dehradun and the name of identified plants were assigned.

**Table 1: Medicinal Plants Used By Bhutia Tribals Of Uttarkashi District, Uttarakhand**

S.N.	Botanical Name of Medicinal Plant	Family	Common Name	Habit	Plant Part used	Uses	Mode of Administration
1	<i>Abrus precatorius</i> L	Fabaceae	Ratti	Wild Climber	Leaf and Seed	Boils, Leucoderma	Fresh leaf paste is warmed gently and applied over boils.  Seed paste applied externally to treat eczema.  Seed paste mixed with root paste of <i>Plumbago zeylanica</i> L. and is applied externally on affected parts of leucoderma.
2	<i>Achyranthes aspera</i> L	Amaranthaceae	Apamarga	Wild Herb	Leaf	Muscular swelling Eczema Cuts	Leaf crushed and mixed with cow ghee is used in deep cuts and wounds.
3	<i>Acmella calva</i> (DC) Jansen.,	Asteraceae	Marethi	Wild Herb	Entire plant	Toothache and Piles	Entire plant parts crushed and made paste with water and are applied externally on different skin diseases.
4	<i>Acorus calamus</i> L	Acoraceae	Buch	Wild Herb	Rhizome	Scabies	Rhizome paste is applied externally to cure scabies.  Rhizome powder used to eliminate dandruff.
5	<i>Adiantum capillus-veneris</i> L	Adiantaceae	Maideb Hair	Wild Herb	Leaf	Snake bite and Scorpion sting	Leaf paste is applied externally to stop bleeding from fresh cuts.
6	<i>Ageratum conyzoides</i> L.,	Asteraceae	Gandhaua	Wild Herb	Entire plant	Cuts and wounds, Infection between toes	Leaf juice and leaf paste applied on skin burns, cuts, wounds, boils and muscular pain.  The leaves are crushed and used as poultice for boils, sores, and swollen feet. Decoction of leaves is applied externally on the affected part of the skin diseases.
7	<i>Albizia lebbeck</i> (L.) Benth.,	Fabaceae	Siris	Wild Tree	Leaf, and Stem bark	Skin diseases, bronchitis, Toothache	Juice of the stem bark is applied externally on the ringworm, scabies, and septic ulcers.  Leaf poultice is applied over muscular swelling and boils.
8	<i>Alstonia scholaris</i> (L.) R. Br.,	Apocynaceae	Chhatiwan	Wild Tree	Stem bark and Leaf	Boils, Skin diseases	Bark paste mixed with mustard oil, applied externally on infected area in skin diseases. Bark and leaf paste is applied on infectious wounds. The latex is applied to wounds and boils.
9	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.,	Amaranthaceae	Garri	Wild Herb	Entire plant parts	Wounds and sores	Juice of entire plant part applied externally on affected parts to cure scabies.
10	<i>Amaranthus tricolor</i> L	Amaranthaceae	Chaulai	Wild Herb	Leaf	Septic, Ulcers, Pimples	Leaf paste is applied externally on abscesses and septic ulcer for quick healing.  The paste of leaf with a pinch of turmeric powder is applied on the face for curing pimples.

### RESULT

In the present study 60 medicinal plants were collected for cure of different skin diseases from five identified villages namely Sukki, Jhala, Bagori, Birpur and Dunda. The results of this study are presented in Table 1 and the medicinal plants are arranged in alphabetical order. Plant species, which are used in traditional medicines, are enumerated with their botanical and local names, family, voucher number, habit, habitat, and use of plant parts in the treatment of various skin diseases.

### Ethnobotanical Observations

- Bhutia tribals are good herbalists. Plants are used in different forms such as juice extracts, decoctions, pastes, infusions, etc.
- A juice is extract is prepared by grinding the cleaned plants or plant parts with water; the extract is used after have been filtered.
- A decoction is obtained by boiling the plants or plant parts in water.
- A paste is made by crushing small plant parts with water and making this into a soft mass.
- An infusion is prepared by soaking the cleaned plant or plant parts in water for a few hours or days; afterwards it is filtered and used.
- A list of medicinal plants with binomial, family, local name, useful parts, habit, wild/cultivated and medicinal uses is provided below in table 1.

11	<i>Ampelocissus divaricata</i> (Wall. ex Lawson) Planch	Vitaceae	Pureni	Wild Trailing herb	Root, Fruit	Scorpion bite	Root paste applied externally on infected area in skin diseases. Fruit juice is used in skin diseases.
12	<i>Anagalis arvensis</i> L..	Primulaceae	Armale	Wild herb	Entire plant	Skin Diseases	Juice of entire plant applied topically in skin diseases and decoction is used in snake bite.
13	<i>Ananas comosus</i> (L.) Merr..	Bromeliaceae	Bhuin Kathar	Cultivated Herb	Fruit	Blood purifier and indigestion	Fresh fruit juice applied topically in skin diseases.
14	<i>Annona squamosa</i> L	Annonaceae	Sitaphal	Wild, small sized tree	Leaf and Seed	Cuts, wound, and skin diseases	Poultice of leaves is applied over boils and sores. Seed powder is poured over the skin diseases of domestic cattle.
15	<i>Arisaema tortuosum</i> (Wall.) Schott,	Araceae	Baanko	Wild herb	Rhizome	Headache and Toothache	Rhizome paste is applied on body part stung by scorpion.
16	<i>Artocarpus heterophyllus</i> Lam.,.	Moraceae	Kathal	Cultivated tree	Leaf	Skin diseases, pimples, cuts and wound	Leaf paste is applied over boils, cuts and wounds, and skin diseases.
17	<i>Basella alba</i> L	Basellaceae	Poi sag	Wild climbing herb	Leaf	Insomnia	Leaf paste is applied externally on skin allergy for quick relief.
18	<i>Bassia longifolia</i> Koenig	Sapotaceae	Mahuwaa	Wild tree	Bark and seed	Cough, cold, and bronchitis	Bark paste is applied externally on cuts and wounds to stop bleeding. Seed oil is applied externally on skin diseases.
19	<i>Bauhinia purpurea</i> L	Fabaceae	Malu	Wild tree	Leaf	Rabies, Boils	Leaf paste is applied externally over skin diseases.
20	<i>Begonia picta</i> Smith.,.	Begoniaceae	Magar Kaanche	Wild herb	Entire plant	Pained nipples, Peptic ulcers	Plant paste is applied to stop bleeding from cuts and wounds. Plant paste applied externally on ringworm and scabies.
21	<i>Berberis asiatica</i> Roxb. ex DC.,.	Berberidaceae	Daru Haldi, Kingor	Wild shrub	Stem bark and root	Wounds and inflammation, Old ulcers	Yellow stem bark is crushed mixed in water and make a paste that applied externally on pimples, itches, and scabies. Root paste applied externally on wounds and inflammation.
22	<i>Blumea lacera</i> (Burm. f.) DC.,.	Asteraceae	Kukur ghans	Wild herb	Leaf	Cutaneous infection Cuts	Leaf juice along with Chini jhar ( <i>Scoparia dulcis</i> L.) is applied on the bruise, cuts, and wounds. Leaf juice is applied on bruises of toe, cuts and wounds.
23	<i>Boerhavia diffusa</i> L	Nyctaginaceae	Punarnaava	Wild herb Root		Pimples Bronchitis and redness of eye	Root paste is taken orally to cure pimples.
24	<i>Bryophyllum pinnatum</i> (Lam.) Oken.,.	Crassulaceae	Patthar chatta	Wild succulent herb	Leaf	Wounds and Boils	Leaf paste applied on abscesses to remove pus. Burnt leaves are externally applied in wounds, boils, and skin burns. A fresh leaf is warmed gently and wrapped on pussy wound to remove pus.
25	<i>Calotropis procera</i> (Aiton) Dryander	Asclepiadaceae	Aank	Wild shrub	Latex	Scabies, Ringworm, Boils, Blisters,	Milky latex mixed with salt is applied on scabies, ringworm, boils, blisters, and abscesses to removes pus.
26	<i>Cannabis sativa</i> L	Cannabaceae	Bhang	Wild herb	Young shoot	Cuts and wounds, skin diseases Healing wounds and Scabies Control bleeding	Decoction of young shoot is applied on cuts and wounds to stop the bleeding and work as antiseptic.

27	<i>Cassia occidentalis</i> L	Fabaceae	Chakmake	Wild herb	Leaf and Seed	Scabies, Skin infection and inflammation on Ringworm and itch	Leaf paste is applied externally on skin infection and inflammation. Seed paste with mustard oil is applied externally on eczema and skin diseases.
28	<i>Cassia tora</i> L	Fabaceae	Chhinchhine	Wild herb	Root, leaf and seed	Ringworm and itch Leucoderma, leprosy, and itches Skin diseases and arthritis	Paste of leaves and seeds with Besar ( <i>Curcuma longa</i> L.,) applied externally on skin to cure skin diseases and eczema. Paste of root is applied on affected area to treat ringworm.
29	<i>Centella asiatica</i> (L.) Urban.,	Apiaceae	Bramhi	Wild creeping herb	Entire plant	Skin diseases Antidote to poison, cuts and wounds Leprotic wounds	Plant juice is applied to treat cuts and wounds. Leaf paste is applied on wounds for quick healing. Paste of entire plant is applied on affected area to cure ringworm.
30	<i>Cheilanthes tenuifolia</i> (Burm. f.) Sw	Pteridaceae	Silver Fern	Wild herb	Fronds	Abscesses	Fronds cut into pieces, made to a paste, applied on abscesses in the form of poultice to remove pus.
31	<i>Cissampelos pareira</i> L	Menispermaceae	Teru	Wild climbing herb	Entire plant	Itch	Paste of entire plant parts applied externally on affected areas of skin irritations, ringworm, burns, and wounds.
32	<i>Clerodendrum viscosum</i> Vent.,	Verbenaceae	Dhusi	Wild shrub	Root and leaf	Skin diseases	Root and leaf paste applied on affected area to treat eczema and ringworm. Leaf latex applied in fresh cuts and wounds to check bleeding.
33	<i>Datura metel</i> L	Solanaceae.	Kala Dhatura	Wild herb	Seed	Boils Scabies	Seed powder boiled in mustard oil and applied over affected parts to treat scabies and boils.
34	<i>Eclipta prostrata</i> (L.) L	Asteraceae	Bhringraaj	Wild herb	Entire plant	Wounds, Cuts, scabies and skin diseases	Plant paste is applied over cuts, wound, skin diseases, and pimples as antiseptic. Crushed leaves are applied between toes and heal against fungal disease
35	<i>Eleusine coracana</i> (L.) Gaertn.,	Poaceae	Kodo	Cultivated herb	Seed	Skin Diseases	Paste of seed is applied on skin diseases.
36	<i>Euphorbia hirta</i> L	Euphorbiaceae	Dudhi	Wild herb	Entire plant	Cuts, wounds Snake bite, Burn, wounds, and boils	Fresh milky latex of plant is applied to treat skin burns, cuts, wounds, boils, and ringworm.
37	<i>Ficus benghalensis</i> L	Moraceae	Bargad	Wild tree	Latex, stem bark	Boils, wounds Healing of foot crack, Scabies	Latex of plant is applied externally on affected part of mumps and heals foot crack.
38	<i>Ficus religiosa</i> L	Moraceae.	Pipal	Wild tree	Stem bark, and leaf	Skin diseases, Scabies, Cuts and wounds	Stem bark, leaf, and young shoot pastes used to control bleeding from cuts and wounds. Stem bark paste along with powdered rhizome of <i>Curcuma longa</i> L., applied externally on cuts, wounds, and skin diseases.
39	<i>Gloriosa superba</i> L.	Liliaceae	Mulhati	Wild climbing herb	Rhizome	Ringworms, Skin Diseases	Rhizome paste applied on ringworm and other skin diseases.
40	<i>Heliotropium indicum</i> L	Boraginaceae		Wild herb	Entire plant	Cuts and infection on tongue	Plant juice used to wash the wounds. Root extract applied over the affected areas on skin allergy. Plant paste applied over fresh minor cuts and wounds as antiseptic for quick healing.
41	<i>Ipomea aquatica</i> Forssk	Convolvulaceae	Karmaiysag	Wild aquatic herb	Stem and leaf	Ringworm and skin diseases	Stem paste applied on skin burn. Leaf juice applied on prickly heat to get quick relief.

42	<i>Kaempferia rotunda</i> L	Zingiberaceae	Champa	Wild herb	Tuber	Boils	Tuber paste applied externally on boils and over tumors (nuts formed by remain parts of spine) to burst out and remove pus and remains of spine.
43	<i>Lawsonia inermis</i> L	Lythraceae	Mehandi	Wild shrub	Entire plant	Heal cracks, and mud infection, cuts, wounds, and boils	Paste of entire plant rubbed over affected parts to cure skin inflammations. The pastes of leaves are used to relieve burning of palm and soles.
44	<i>Leucas cephalotes</i> (Roth.) Spreng	Lamiaceae	Dron pushpi	Wild herb	Leaf, and tender shoot	Burns	Juice of leaves and tender shoots applied externally in skin burns. Leaf paste is used for boils, blisters, and insect bite.
45	<i>Lycopodium clavatum</i> L.,.	Lycopodiaceae	Naagbeli	Wild, trailing shrub	Root	Wounds and Cuts	Root juice applied externally on cuts and wounds for its fast healing power.
46	<i>Melia azedarach</i> L	Meilaceae	Bakain	Wild small sized tree	Leaf and flower	Leucoderm a and wound	Crushed leaves with water used against pimples, itching, allergy and other skin diseases. Paste of fresh leaves is used for healing as antiseptic. Poultice of flower applied externally on skin eruption.
47	<i>Mimosa pudica</i> L	Fabaceae	Chhui Mui	Wild under shrub	Root and leaf	Cuts wounds and Scabies	Root poultice applied over cuts and wounds. Fresh leaves eaten raw to cure different skin diseases.
48	<i>Mirabilis jalapa</i> L	Nyctaginaceae	4 O'Clock	Wild herb	Leaf	Boils	Leaf juice is demulcent and applied over boils.
49	<i>Nerium oleander</i> L	Apocynaceae	Karbir	Wild shrub	Leaf and latex	Ringworms	Leaf paste is used in ringworm. Latex of plant is used to expel spines from the body.
50	<i>Osbeckia stellata</i> Buch. - Ham., ex D. Don	Melastomataceae	Raat Chulsi	Wild Shrub	Plant juice	Cuts, wounds and scabies	Plant juice applied externally on affected parts by ringworm.
51	<i>Oxalis corniculata</i> L	Oxalidaceae	Tinpatiya	Wild herb	Leaf	Cuts, wounds, antiseptic Pimples, Boils and skin problems	Leaf juice applied over cuts and wounds. Juice of fresh plant material is applied topically as antiseptic on wound to stop bleeding from cuts. Fresh leaf crushed and its juice applied on insect bites, in skin eruptions, and infected portion of eczema.
52	<i>Plumbago zeylanica</i> L	Plumbaginaceae	Chitu	Wild under shrub	Latex and tender shoot	Leprosy, skin diseases Blister, wart, and ringworm	Milky latex is applied on affected parts of scabies. Paste of tender shoot is used to treat leprotic wound and skin diseases.
53	<i>Premna barbata</i> Wall. ex Schauer..	Verbenaceae	Gineri	Wild small sized tree	Wood	Bleeding, Cuts, Wounds	Wood paste is applied to stop bleeding from cuts and wounds.
54	<i>Pterocarpus marsupium</i> Roxb..	Fabaceae	Bijaysaal	Wild tree	Leaf	Boils, Sores, Skin Diseases	Decoction of bruised leaves is applied on boils, sores, and other skin diseases.
55	<i>Rumex nepalensis</i> Spreng.,.	Polygonaceae	Almor	Wild herb	Root and leaf	Skin diseases, Cuts, wounds, swelling Ringworm, skin burns, Eczema Scabies	Root paste applied externally on cuts and wounds due to quick healing property. Fresh leaf juice is applied on cuts, wounds, and muscular swellings
56	<i>Solanum nigrum</i> L	Solanaceae	Bamor	Wild herb	Leaf and fruit	Ringworm, Wounds	Fresh leaf crushed and made paste, which is used topically in skin diseases, usually when skin has small warts. Unripe fruit paste is applied on ringworm.

57	<i>Tridax procumbens</i> L	Asteraceae	Kurkure	Wild herb	Entire plant	Cuts, wounds	Fresh plant juice is applied externally to treat cuts and wounds.  *Plant paste is applied to treat boils and pimples.
58	<i>Viscum album</i> L	Loranthaceae	Hadchur	Wild semi-parasitic climber	Stem and root	Breaks, sprains, and bruises, Boils and wounds	Dried powder of stem and root mixed in mustard oil and applied locally on boils and wounds.
59	<i>Wedlandia puberula</i> DC	Rubiaceae	Kaaiyon	Wild small sized tree	Stem bark	Cuts and Wounds	Stem bark juice is applied externally to treat cuts and wounds.  Stem bark paste is applied on skin diseases.
60	<i>Zizyphus rugosa</i> Lam	Rhamnaceae	Jangali Ber	Wild small sized tree	Leaf	Skin Diseases	Leaf paste is applied locally in skin diseases.

## DISCUSSION

The recorded ethno-medicinal plants were used in the treatment of various skin diseases such as cuts and wounds, eczema, boils, burns, abscesses, scabies, dog, and insect bites, ringworm, septic, ulcers, allergy, pimples, leucoderma, prickly heat, warts, and inflammations. Majority of plant species described in the present investigation was used in the treatment of cuts and wounds, eczema, boils, dog and insect bite, abscesses, scabies, ringworm, and pimples. Most of the herbal remedies were taken topically in the form of paste. The plant parts were crushed and made into paste for application over the area of the diseases. In some cases along with plant parts a little amount of salt, oil, or ghee was used. This addition might be to enhance the efficacy of herbal remedies or to make the remedy more palatable masking the undesirable taste when taken orally. The medicinal plants are usually collected from wild habitat as and when there is a need. Many of the information reported in this study concerning with skin diseases are *Amaranthus tricolor*, *Anagalis arvensis*, *Calotropis procera*, *Cheilanthes tenuifolia*, *Eleusine coracana*, *Gloriosa superba*, *Mirabilis jalapa*, *Nerium oleander*, *Premna barbata*, *Pterocarpus marsupium* *Wedlandia puberula*, and *Zizyphus rugosa* are found to be and deserves further study.

The information provided in the paper is limited and there is a scope to initiate further ethno-botanical among the community to gather information as far as possible. The medicated claims incorporated in the study need to be evaluated to discover their potentiality as drugs. There is an urgent need to explore and document the ethno-medicinal plants used by the different ethnic communities of Uttarkashi district before such knowledge vanishes.

## CONCLUSION

This study indicated that the study area has plenty of medicinal plants to treat skin diseases. It is evident from the interviews conducted in different villages; knowledge of medicinal plants is limited to traditional healers, herbalists, and elderly person who are living in rural areas.

This study concluded that even though the accessibility of western medicine for simple and complicated diseases is available, tribal people in study areas of Uttarkashi district is still continue to depend on medicinal plant for the treatment of some simple skin diseases such as cuts and wounds, boils, eczema, scabies, and abscesses. Well-knowledge healers have good interactions with patients and this would improve the quality of healthcare delivery. As indigenous knowledge on usages of medicinal plants is transmitted without any systematic process and younger generations of the communities are not interested in traditional healing system because it has no/very little scope for money, so they engage themselves in other occupations. It thus becomes, necessary to acquire and preserve this traditional system of medicine by documentation and identification of specimens.

The plant part use in phyto-therapy showed that leaf is use in a large number of species followed by stem, stem bark, tender shoot, and rhizome use. Leaf and stem collection if not done carefully then could threaten existence of the species. Debarking or collection of juice/latex could threat the tree if practiced inappropriately. Even more sensitive is the collection of root, rhizome, and tuber. It is learned from the local residents that a large number of medicinal species are collected from these areas for commercial purpose and whole plant harvest makes the largest volume followed by seed, fruit, stem, and tubers.

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