

Ethno-Medicinal Plants used to Cure Various Skin Diseases of Humans in the District of Haridwar, Uttarakhand, India

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ABSTRACT

An ethnomedicinal plants survey was conducted to collect information for the treatment of skin diseases from plants in tribal and village communities of Haridwar district. The study highlights the utility and counsel therapies of ethnomedicinal flora on various skin diseases, *i.e.*, fungal infection, itching, scabies, psoriasis, leprosy etc., in human being. It also attracts attention for the need towards a detailed study on plants, which could provide novel remedies to other dreadful diseases. Information on the use of the plant for the treatment of skin diseases was collected on the basis of personal interviews with traditional healers. In this communication, the authors have reported 44 plant species belonging to 22 different families used to cure various skin diseases. These have been enumerated with family names, common names, mode of drug preparation and their medicinal utilization.

Keywords : Skin diseases, Ethnomedicinal plants, Local inhabitants, Haridwar, Uttarakhand

HUMAN already has a longing to be groomed and he craves to look beautiful, his complexion and skin contribute a lot, but once the skin gets infected and is not taken care of, then it becomes an incurable disease. Good and healthy skin is smooth and free from stains, whether it is fair or dark. Human skin is the outer covering of the body, which gives protection and prevents disease-causing bacteria from entering the body and regulates the temperature of the body. The skin also does the work of taking out the toxic elements growing in the body (Ashima, 2016). Skin disease is a disease that gradually engulfs the whole body and then becomes a problem for health. Skin allergy is most common form of infections occurring in people of all ages. Skin diseases like ringworm, scabies, itching, leprosy, rashes on the body are contagious.

There are thousands of plants which are known and unknown in the plant kingdom, that yield medicine or drugs due to presence of some chemical substances in the plant tissues which produce a definite physiological action on living biological body. Hundreds of medicinal plant species worldwide are used in the traditional medicine as a treatment for skin diseases caused by bacteria, fungi and viruses.

India is a repository of medicinal plants. The art of herbal treatment has very deep root in Indian culture and has used the plants not only for curing diseases but also during several ceremonies. Indian traditional system of herbal medicine is Ayurveda. It is eternal and the world's oldest medical science, we can be proud of it, it is our heritage. Ayurveda is more than science because it is a changeless science, *i.e.*, what was yesterday in Ayurveda, it is today and it will remain the same for tomorrow as well. So, it is necessary to have proper practice and firsthand knowledge. There are many such incurable diseases which cannot be cured by allopathy. Such diseases can be eliminated from the root by Ayurveda treatment with the help of herbs. Skin diseases like eczema, leukoderma, ringworm, scabies and many other conditions are treated completely with herbal drugs.

Haridwar, formerly known as Mayapuri, is a district in the state of Uttarakhand, India. The district is surrounded by Dehradun districts in the North and East, Pauri Garhwal, Muzaffarnagar and Bijnor districts of Uttar Pradesh in the East and Saharanpur district in the West. A paradise for nature lovers and one of the seven holiest places in Hinduism, Haridwar offers a kaleidoscope of Indian culture and civilization.

The plant diversity in the area grasps immensely rich and a large number of ethno-medicinal plants which are used in the treatment of several diseases including skin diseases. Today, there is a growing desire to explore the role of ethno-botanical studies in trapping centuries-old traditional folk wisdom, as well as in discovering new plant resources for food, medicine, etc.

Haridwar district is a mixed form of hilly and plain region of Uttarakhand. It comes under the Garhwal region of Uttarakhand, which is situated in the Shivalik hills in the western Himalaya. Some interesting work has been done by ethno-medicinal explorers in the western Himalaya (Aswal & Goel, 1989; Negi & Gaur, 1994 and Gaur, 1999). Some Plant Explorers (Dangwal, 1993; Dangwal *et al.*, 1994a, 1995; Maikhuri *et al.*, 1998; Kala, 2010; Semwal *et al.*, 2010; Tewari *et al.*, 2015; Rana *et al.*, 2013; Sharma, 2014; Kumar & Dangwal, 2018, 2020 and Dangwal & Uniyal, 2020) etc. have recently done work on ethno-medicinal plants in different parts of the Garhwal Himalayas. The work on ethnobotany of Haridwar district was done from time to time by many plant explorers, *viz.*, Uniyal (1977), Dhiman (1997), Kaushik and Dhiman (2000) etc. Arora (2009) reported 61 ethnomedicinal plants from Haridwar district used in various ailments. A case study by Dangwal *et al.* (2010) enlisted 23 plant species used for curing various diseases in Garhwal Himalaya. Kala (2011) documented 133 plant species for use in curing various skin diseases. Sharma *et al.* (2012) reported 20 ethnobotanically important tree species used in Narendranagar block, Tehri Garhwal. Rana *et al.* (2013) reported 160 ethno-botanically important plant species from Nanda Devi Bio-reserve, Uttarakhand. Kumar and Dangwal (2018) gave information on medicinal uses and methods of medicine preparation of 25 different plant species used by the local folk in Haridwar district. Dangwal and Uniyal (2020) provided ethnomedicinal information on 10 plant species used in district Tehri Garhwal to treat Sun-damaged skin. The authors found insufficient reports on the ethno-medicinal plant resources from the district Haridwar (Uttarakhand). Therefore, the present study focuses on the documentation of traditional knowledge on

medicinal plants used in the treatment of skin diseases in Haridwar district of Uttarakhand.

The Study Area

The ethnomedicinal survey was conducted in the Haridwar district, the South western region of Uttarakhand with latitude and longitude 29°58' North and 78°13' East, respectively. The height from the mean sea level is 249.7 m. It is considered as Devbhoomi with agricultural and forest area. The total area of the district is 2360 sq kms. The district is administratively divided into three Tehsils, *i.e.*, Haridwar, Roorkee and Laksar and six development blocks, *i.e.*, Bhagwanpur, Roorkee, Narsan, Bahadarabad, Laksar and Khanpur. Haridwar is one of the first centers where the Ganges originates to touch the planes from the mountains. The population of the district as per 2011 census is 18.90 lakh (<https://www.indiacensus.net/district/haridwar>). Due to the location of Haridwar on the banks of river Ganges, it has plentiful water resources and various types of food grains are produced in abundance.

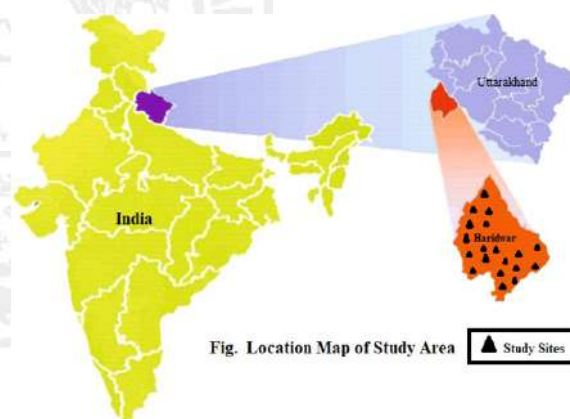


Fig. 1. Location Map of Study Area

Fig.1 : Map showing the location of district Haridwar in India

(https://www.researchgate.net/publication/345996319_An_Adaptive_Technique_to_Detect_and_Remove_Shadow_from_Drone_Data/figures)

MATERIAL AND METHODS

An extensive field survey was conducted by authors during August 2019 - 2021 from different villages and tribal belts adjoining forest areas of the district Haridwar, to collect as well as recognize the plants with the ethnomedicinal lore against skin diseases. Firsthand information was gathered through direct

interactions with Hakeems, local folk practitioners, tribals and villagers at field. Collected ethnomedicinal plants were identified with relevant scientific literature. The information was recorded in the form of a standard questionnaire that included common name of the plant, parts used, method of drug preparation, mode of administration, dosage and duration of treatment. Voucher specimens were deposited in the Herbarium and Plant Systematic Laboratory, Department of Botany, H.N.B. Garhwal Central University, S.R.T Campus, Badshahithaul, Tehri Garhwal.

RESULTS AND DISCUSSION

In the Table 1, plant species studied are listed with their family names, common names, plant part used and herbal remedies. A total of 44 medicinal plants belonging to 41 genera and 22 families have been investigated from Haridwar district of Uttarakhand, India, with the aim of recording the indigenous knowledge to collect information from knowledgeable men and women, Hakeems, Vaidhyas, Saint, Pilgrims, etc. of the area. Fig. 2 shows pictures of some of



Fig.2 : Some ethno-medicinal plants used to cure human skin diseases in district Haridwar, Uttarakhand

TABLE 1
Ethno-medicinal plants used to cure skin diseases in District Haridwar, Uttarakhand, India

Botanical Name	Family Name	Common Name	Plant Part Used	Herbal Remedy
<i>Achyranthes aspera</i> L.	Amaranthaceae	Prickles Chaff, Latjiri, Lich-kuri	Root, Leaves	1. Root and leaf paste is applied on ringworm 2. Leaves boiled in water and the water is used to take bath for relief in skin diseases
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Prickly Amaranth, Kanteli Chaulai	Whole plant, Root	1. Whole plant juice is applied on allergic infected area before taking bath 2. Root paste is applied on eczema
<i>Celosia argentea</i> L.	Amaranthaceae	Quail grass, Sufed murga	Leaves	Leaves paste is applied on ringworm
<i>Coriandrum sativum</i> L.	Apiaceae	Coriander, Dhaniya	Leaves	Leaf paste is applied to cure skin diseases
<i>Daucas carota</i> L.	Apiaceae	Carrot, Gajar	Root	Carrot is grated, roasted on fire and mixed with salt. This gives relief from itching when poultice is applied on ringworm
<i>Calotropis gigantea</i> (L.) Dryand.	Apocynaceae	Giant milkweed, Safed Aak, Madar	Leaves, Latex	1. The dried powder of leaves is boiled in sesame (<i>Sesamum indicum</i> L.) oil and used to treat eczema wound 2. Leaf paste is applied on skin allergy 3. Latex from the plant is used on ringworm and other diseases
<i>Nerium oleander</i> L.	Apocynaceae	Oleander, Kaner	Root bark, Flower	1. Mix 50 grams root bark in 200 grams of sesame (<i>Sesamum indicum</i> L.) oil. Filter it after heating, fill it in a vial and apply it on eczema twice a day 2. Root bark and flower extract is externally applied to cure skin diseases and leprosy 3. Root bark powder is mixed with turmeric (<i>Curcuma domestica</i> Valetton) powder and coconut (<i>Cocos nucifera</i> L.) oil and is applied externally in the treatment of ringworm
<i>Brassica campestris</i> L.	Brassicaceae	Field mustard, Sarson	Seed	Grind in sulfur and mix mustard oil. It gives relief in itching
<i>Carica papaya</i> L.	Caricaceae	Papaya, Papita	Latex	Latex is applied on ringworm
<i>Coccinia indica</i> Wight & Arn.	Cucurbitaceae	Ivory gourd, Kandori	Whole plant	Plant paste is applied on psoriasis
<i>Emblica officinalis</i> Gaertner	Euphorbiaceae	Indian gooseberry, Amla	Leaves, Bark	Leaf and bark paste is applied on affected area of allergy
<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	Indian tree spurge, Unglipor	Latex, Leaves	1. Fresh latex is applied on eczema 2. Decoction of leaves is applied on ringworm
<i>Jatropha gossypifolia</i> Roxb.	Euphorbiaceae	Bellyache bush, Jangli Arand	Leaves	Young leaves paste is applied on ringworm
<i>Ricinus communis</i> L.	Euphorbiaceae	Castor oil plant, Arand	Seed	Seed paste mixed with turmeric powder is applied on skin to get relief from itching
<i>Butea monosperma</i> ringworm.	Fabaceae	Flame-of-the-forest, Dhaak	Leaves, Bark	Leaf and bark paste is applied on (Lam.) Kuntze
<i>Caesalpinia bonduc</i> L.	Fabaceae	Fever nut, Yellow nicker, Karanj	Seed	Seed cotyledon paste is mixed with castor (<i>Ricinus communis</i> L.) oil and applied on ringworm

Botanical Name	Family Name	Common Name	Plant Part Used	Herbal Remedy
<i>Cassia fistula</i> L.	Fabaceae	Golden shower tree, Amaltas	Bark, Leaves	1. Powder or decoction of bark is prescribed in the treatment of leprosy 2. Leaf paste is applied to treat skin diseases such as eczema and leucoderma
<i>Cassia tora</i> L.	Fabaceae	Sickle senna, Chakwar	Leaves	Decoction of leaves is applied on ringworm and other skin diseases
<i>Cicer arietinum</i> L.	Fabaceae	Chick pea, Chana	Seed	Grind gram with water and mix it with honey. The paste is applied to cure itching
<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Sissoo, Sheesham	Bark	Bark paste is applied on itching
<i>Tamarindus indica</i> L.	Fabaceae	Tamarind, Imli	Seed	Grinding seeds with lemon juice and applying it cures ringworm
<i>Tephrosia purpurea</i> (L.)	Fabaceae	Purple Tephrosia, Paal	Leaves	Leaf paste is applied on skin to get relief from itching
<i>Mentha viridis</i> L.	Lamiaceae	Spearmint, Pudina	Leaves	1. Leaf paste is mixed with turmeric powder and applied on itching 2. Applying leaf juice repeatedly on the ringworm gives fruitful result
<i>Ocimum sanctum</i> L.	Lamiaceae	Holy basil, Tulsi	Leaves	Leaf paste is applied on ringworm
<i>Vitex nigundo</i> L.	Lamiaceae	Chaste tree, Nirgundi, Mahala	Whole plant	Massaging plant oil is beneficial in itching and boils
<i>Allium cepa</i> L.	Liliaceae	Onion, Pyaaz	Bulb	One to two teaspoon of juice from bulb is taken at morning for curing the fungal infection
<i>Corchorus capsularis</i> L.	Malvaceae	White jute, Logni	Seeds	Seed paste mixed with castor oil is applied on ringworm
<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	China rose, Gurhal	Flower	Flower paste is applied to control itching
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Neem, Indian lilac	Leaves, Bark	1. Leaf and bark paste is applied on all type of skin diseases 2. Take a bath after boiling leaves in water to relieve in skin infection 3. Half a cup of leaf juice is taken at early morning to avoid skin diseases
<i>Cissampelos pareira</i> L.	Menispermaceae	Velvetleaf, Nirbasi	Root, Leaves	1. The paste of the root is mixed with rice water and is taken orally to cure leprosy 2. Leaves are applied externally in the treatment of scabies and to relieve itching
<i>Ficus racemosa</i> L.	Moraceae	Cluster fig, Gular	Bark	Bark paste is applied on eczema
<i>Ficus benghalensis</i> L.	Moraceae	Banyan, Bargad	Sap, Bark	By applying the sap of tree at night and tying the ash of its bark in the affected area, leprosy patients are said to get some benefit in a week
<i>Musa balbisiana</i> Colla	Musaceae	Banana, Kela	Leaves, Fruit	1. Dry the banana leaves and burn it to ashes, filter it with cloth and mix coconut (<i>Cocos nucifera</i> L.) oil and apply on the itchy area and red rashes at night 2. Ripen fruit is applied on skin to cure the fungal infection

Botanical Name	Family Name	Common Name	Plant Part Used	Herbal Remedy
<i>Argemone mexicana</i> L.	Papaveraceae Satyanasi	Mexican poppy,	Whole plant, Latex	Latex or whole plant paste is applied on eczema
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Ceylon leadwort, Chitrak	Leaves	Leaf juice is applied on ringworm
<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Stone apple, Bael	Bark, Leaves	Bark paste or leaf juice is applied on ringworm
<i>Citrus medica</i> L.	Rutaceae	Fingered Citron, Nimbu	Leaves	Leaf paste is applied on itching
<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Curry Leaf Tree, Curry patta	Leaves	Leaf paste is applied daily once on psoriasis
<i>Datura stramonium</i> L.	Solanaceae	Jimson weed, Dhatura	Leaves	Leaf juice is applied on ringworm
<i>Solanum lycopersicum</i> L.	Solanaceae	Tomato, Tamatar	Fruit	Mix of riped fruit juice and coconut (<i>Cocos nucifera</i> L.) juice is massaged on itching
<i>Solanum nigrum</i> L.	Solanaceae	Deadly nightshade, Bhamolan	Leaves	Leaf paste or juice is applied on ringworm
<i>Lantana camara</i> L.	Verbanaceae Phoolwari	Lantana, Wild sage, Kuri-ghas,	Leaves	Leaf paste is applied on skin itching
<i>Curcuma domestica</i> Valetton	Zingiberaceae	Turmeric, Haldi	Root	Application of turmeric powder mixed with sesame (<i>Sesamum indicum</i> L.) oil is advised to cure skin diseases
<i>Tribulus terrestris</i> L.	Zygophyllaceae	Puncture vine, Gokharu	Whole plant	Plant juice is applied on psoriasis

these medicinally important plant species. Furthermore, it is a known fact that the knowledge of indigenous people is valuable in the context of conservation of biological diversity and its sustainable use at the present time. It has been also seen that both wild and cultivated species of plants are used by the residents of the study area to prepare the medicine in various diseases.

Most dominant family, with 8 plant species in total, was Fabaceae. It was followed by Euphorbiaceae (4 plant species), Amaranthaceae (3 plant species), Rutaceae (3 plant species) and Solanaceae (3 plant species). The plant parts used for the herbal remedies were root, root bark, leaves, seeds, latex, flowers, bark, bulb, sap, fruits and whole plant in some cases. Out of these, leaves were the most employed plant part for herbal preparations. The skin conditions dealt with included psoriasis, itching, ringworm, eczema, scabies,

leprosy, fungal infections, allergy, rashes, boils, leucoderma and other skin diseases and infections. Ringworm has the maximum herbal remedies in the study. The formulations used using the plant species were paste, decoction, juice, powder, ash, whole plant oil and others. Many formulations needed other ingredients like salt, sesame oil, coconut oil, castor oil, turmeric powder, mustard oil, honey, lemon juice and water.

Plants could potentially treat a variety of skin problems. The present investigation adds to the existing knowledge of folk herbal remedies for the treatment of skin diseases. The documentation of such priceless knowledge plays a significant role in developing the health policies for the people and also for the extraction and characterization of the bioactive compounds responsible for providing the health benefit. So that people in the same or in other regions can make use

of it. Due to road construction being at the peak, population growth, urbanization, factories, nomadic life of tribal people, farm, industries and the demand for medicinal plants in particular, people are overexploiting without any knowledge of regeneration and conservation, so particular species are under threat. It becomes our duty to know and protect the plant and to make people aware of it.

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