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RESEARCH ARTICLE

Medicinal plants grown in the campus of Government Post Graduate College Dakpathar, Dehradun, Uttarakhand (India)

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ABSTRACT

The paper enumerates 60 species of Ethnomedicinal plants belonging to 29 families growing in the botanical garden of Veer Saheed Keshari Chand Government Post graduate College Dakpathar of Uttarakhand in India along with their uses.

INTRODUCTION

The relation between man and his quest for plant drugs dates back to ancient times, as witnessed by numerous written documents, preserved monuments, and even original recipes of plant medicines (Petrovska, 2012). For the prevention of various disorders, the relation of plants also has been going on since time immemorial, be it in the form of medicine or in the form of food. Plant species, with medicinal properties are accessible and culturally accepted for the treatment of various diseases, so their use is popular since ancient civilizations (Albuquerque et al., 2007; Almeida et al., 2019). According to the World Health Organization (WHO), most of the people use natural resources in healthcare mainly based on plants and their extracts (Kapkoti, Lodhiyal & Lodhiyal, 2014; Kumar et al., 2018). Medicinal plants are used singly or in combination with other substances in the preparation of traditional or alternative medicines (Liu, Tian & Wang, 2019; Matotoka & Masoko, 2018). These plants are considered as rich resources of ingredients which can be used in drug development. Isolation and extraction of plant compounds are imperative to understand their impact on the prevention and treatment of serious illness (Ali, Wabel & Blunden, 2005).

The main purpose of present work was to create awareness among the students and local people regarding the medicinal plants trough cultivation at the Botanical garden in Veer Sahid Keshari Chand Government Post graduate College Dakpathar, Dehradun (Uttarakhand).

MATERIALS AND METHODS

Keeping in view the usefulness and easy availability of medicinal plants used in traditional medicine, a medicinal garden was developed at Govt. PG College, Dakpathar a few years back. In this investigation 50 families of the Dakpathar village were selected. A questionnaire was prepared for information on traditional medicine, in which the local name of the plant, the part used, diseases for which the medicine is used, etc. were asked. Women and men of all age groups of the family were included in the questionnaire.

Medicinal plants used by the local people, growing in the vicinity of Dakpathar were introduced in the garden. Currently 60 such species are growing in the garden. Specimens were collected, processed and identified with the help of floras (Gaur, 1999), and matching with authentic specimens in the herbarium of systematic branch of botany, Forest Research Institute Dehradun. The information received was matched with the modern medicine literature and subjects experts.

RESULTS AND DISCUSSION

Altogether 60 medicinal plants were identified, which have been listed along with their medicinal values in Table 1. A comparative study of the literature used in present study and the

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Table 1. List of medicinal plants and their ethnomedicinal uses

S.N.	Botanical Name	Family	Common Name	Parts used	Medicinal uses
1.	*Acacia catechu* (L.f.) Willd.	Fabaceae	Khair	Bark and stem	Ulcer, asthma, cold and cough.
2.	*Acacia nilotica* (L.) Willd. ex Delile	Fabaceae	Babool	Whole plant	Diabetes, cancer, respiratory disorders and microbial infections.
3.	*Aconitum heterophyllum* Wall. ex Royle	Ranunculaceae	Atis	Whole plant	Fever, cough, cold and asthma.
4.	*Adina cordifolia* (Roxb.) Brandis	Rubiaceae	Haldu	Leaves, bark	Used for microbial infections.
5.	*Aegle marmelos* (L.) Corrêa	Rutaceae	Bel	Fruits	Digestive disorders and stomach pain.
6.	*Alstonia scholaris* (L.) R.Br.	Apocynaceae	Chhitron	Leaves, bark and roots	Chronic dysentery, diarrhoea and typhoid fever.
7.	*Anthocephalus chinensis* (Lam.) A.Rich. ex Walp.	Rubiaceae	Kadam	Leaves and bark	Dysentery, diarrhoea, diabetes, fever, cough, vomiting and wounds.
8.	*Asparagus racemosus* Willd.	Asparagaceae	Stawari	Stem, leaves and roots	Dropsy, cardiac sedative and tuberculosis
9.	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Leaves and bark	Skin diseases and oil used for joints pain.
10.	*Bambusa vulgaris* Schrad. ex J.C.Wendl.	Poaceae	Bans	Leaves and root	Fever, tuberculosis, epilepsy, kidney troubles and increases menstrual flow in women's.
11.	*Bauhinia variegata* L.	Fabaceae	Kachnar	Leaves, flowers and bracts	Cold, cough, asthma, bronchitis, fever and pneumonia.
12.	*Bombax ceiba* L.	Malvaceae	Semal	Bark and root	Leucorrhoea, dysentery and diarrhoea.
13.	*Bougainvillea glabra* Choisy	Nyctaginaceae	Bougainvillea	Leaves and bracts	Chest pain, fever and pneumonia.
14.	*Calotropis procera* (Aiton) W.T.Aiton	Apocynaceae	Aak	Leaf, stem and latex	Bacterial and fungal infections.
15.	*Cascabela thevetia* (L.) Lippold	Apocynaceae	Kaner	Leaves, latex, flowers and roots	Fever, malaria and genitals problems.
16.	*Cassia fistula* L.	Fabaceae	Amaltas	Fruits and seeds	Bacterial and fungal infection, healing of wounds and digestive disorders.
17.	*Celtis sinensis* (Pers.)	Cannabaceae	Khadik	Leaves, fruits and bark	Pulmonary diseases, lungs ulcers and hormonal disorder in women's.
18.	*Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Tejpat	Leaves and bark	Diabetes, cancer and microbial infection.
19.	*Delonix regia* (Bojer ex Hook.) Raf.	Fabaceae	Gulmohar	Leaf, flower and bark	Microbial infection, arthritis, respiratory disorders, piles, diabetes and diarrhoea.
20.	*Elaeocarpus ganitrus* Roxb. ex G.Don	Elaeocarpaceae	Rudraksh	Leaves, fruits and bark	High blood pressure, chicken pox, fever and diabetes.
21.	*Emblica officinalis* Gaertn.	Euphorbiaceae	Amla	Fruits, leaves and bark	Inflammation, cancer, neurological disorders and high blood pressure.
22.	*Ficus benghalensis* L.	Moraceae	Bargad	Leaves, stem and latex	Wounds, skin diseases, eye disorders, diabetes and diarrhoea.
23.	*Ficus benjamina* L.	Moraceae	Weeping fig	Latex and fruits	Skin diseases, piles, vomiting, leprosy and malaria.
24.	*Ficus palmata* Forssk.	Moraceae	Bedu	Latex and fruits	Digestive disorders, ulcer, diabetes and microbial infections.
25.	*Ficus racemosa* L.	Moraceae	Goolar	Latex and fruits	Inflammatory, asthma, diarrhoea, diabetes, liver infections and urinary trouble.
26.	*Ficus* religiosa L.	Moraceae	Peepal	Latex and fruits	Stomach ulcer, diabetes and skin diseases.
27.	*Grewia asiatica* L.	Malvaceae	Van bhimal	Bark and fruits	Fever, tuberculosis, diarrhoea, and sexual disorders in men's.
28.	*Grewia optiva* J.R.Drumm. ex Burret	Malvaceae	Bhimal	Bark and fruits	Fever, bone fracture and lubricant during difficult childbirth.
29.	*Holarrhena pubescens* Wall. ex G.Don	Apocynaceae	Karva	Bark, stem, root and leaves	Jaundice, ulcers, uterine prolapsed, bronchitis, diarrhoea and toothache.
30.	*Jacaranda mimosifolia* D.Don	Ulmaceae	Papri	Leaves, fruits and seeds	Skin diseases, pile, intestinal worm and blood purifier.
31.	*Jacaranda mimosifolia* D.Don	Bignoniaceae	Nupur	Leaves bark and flowers.	Skin diseases, wound, and digestive disorders.

Contd.

32.	*Kigelia africana* (Lam.) Benth.	Bignoniaceae	Sausage tree	Bark and fruits	Skin diseases, cancer and uterus problems.
33.	*Lagerstroemia indica* L.	Lythraceae	Sawani	Leaves, bark and fruits	Head ache, digestive disorders, cancer, skin diseases and diabetes.
34.	*Lagerstroemia parviflora* Roxb.	Lythraceae	Dhoudi	Bark and gum	Kidney, urine bladder trouble, hypertension and lower blood sugar.
35.	*Lawsonia inermis* L.	Lythraceae	Henna	Leaves and bark	Wounds, microbial infections, diabetes, tuberculosis and respiratory disorders.
36.	*Litsea glutinosa* (Lour.) C.B.Rob.	Lauraceae	Brown beech	Bark	Blood purifier and stimulate immune system.
37.	*Melia azedarach* L.	Meliaceae	Dainkan	Leaves and bark	Skin diseases.
38.	*Mimusops elengi* L.	Sapotaceae	Spanish cherry	Leaves and bark	Microbial infections and skin diseases.
39.	*Mitragyna parvifolia* (Roxb.) Korth.	Rubiaceae	Dharakadam	Bark, fruits and roots	Fever, muscular pain, burning sensation, gynaecological disorders and respiratory disorders.
40.	*Moringa oleifera* Lam.	Moringaceae	Drumstick	Leaves and flower	Fever and digestive disorders.
41.	*Morus alba* L.	Moraceae	Sahtoot	Fruits, roots and leaves.	Liver and kidney infections.
42.	*Murraya koenigii* (L.) Spreng.	Rutaceae	Curry patta	Leaves	Dysentery, piles, inflammation and body ache.
43.	*Nyctanthes arbor-tristis* L.	Oleaceae	Harsingar	Leaves and bark	Skin ailments and microbial infections.
44.	*Oroxylum indicum (L.) Kurz*	Bignoniaceae	Trumpet tree	Leaves, stem, bark and fruits	Tumour, respiratory disorders, diabetes, Jaundice and diarrhoea.
45.	*Pyrus pashia* Buch.-Ham. ex D.Don	Rosaceae	Mol	Bark	Typhoid fever, ulcer, and throat pain.
46.	*Pterospermum acerifolium* (L.) Willd.	Malvaceae	Kanakchampa	Leave and bark	Ulcer, inflammatory, abdominal pain, and urinary infections.
47.	*Randia dumetorum* (Retz.) Poir.	Rubiaceae	Mafal	Whole plant	Bacterial infections, inflammatory, fever and headache.
48.	*Ricinus communis* L.	Euphorbiaceae	Arandi	Seeds	Arthritis, muscle aches, gallbladder pain and period pain.
49.	*Rosa webbiana* Wall. ex Royle	Rosaceae	Jangligulab	Flower, fruit and oil	Heart disease, high blood pressure, wounds, quick healing and skin diseases.
50.	*Santalum album* L.	Santalaceae	Chandan	Stem	Fever, microbial infections and reparatory disorders.
51.	*Saraca asoca* (Roxb.) W.J.de Wilde	Fabaceae	Ashoka	Bark	Uterine disorder, fever, burning sensation, leucorrhoea and dysentery.
52.	*Syzygium cumini* (L.) Skeels	Myrtaceae	Jamun	Bark	Dysentery, ulcers and respiratory disorders.
53.	*Tecoma argentea* Bureau & K.Schum.	Bignoniaceae	Tikama	Fruits	Diabetes, digestive disorder and microbial infections.
54.	*Terminalia alata* B.Heyne ex Roth	Combretaceae	Sain	Leaves	Respiratory disorders and scorpion stings.
55.	*Terminalia arjuna* (Roxb. ex DC.)Wight & Arn.	Combretaceae	Arjuna	Leaves	Bone fracture, ulcers, tumour, and HIV infection.
56.	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Bahera	Fruits	Liver infection, respiratory disorders, piles, diarrhoea and eye diseases.
57.	*Terminalia chebula* Retz.	Combretaceae	Harada	Fruits	Dysentery,diarrhoea, ulcer and intestinal disorders.
58.	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Menispermaceae	Giloi	Stem, root and fruits.	Diabetes, fever, jaundice, diarrhoea, bone fracture, pain, asthma, skin diseases, snake bite and eye disorders.
59.	*Toona ciliata* M.Roem.	Meliaceae	Tun	Leaves and bark	Fever, dysentery, headache, ulcer, leprosy, and menstrual disorders.
60.	Zanthoxylum armatum DC.	Rutaceae	Timru	Fruits, seeds, twigs and bark.	Dental infection and toothache. Also used in dyspepsia and fever.

data received from the local people was done. It was found in the quiz that local people use medicinal plants for cure various types of diseases with the help of traditional medicine system.

It has been observed from the quiz that 90% of the people follow traditional medicine, and people rely on traditional medicine in case of minor ailments. People living in the developing countries also rely quite effectively on traditional medicine for primary health care (Singh, 2002). Medicinal plants used in the prevention cure of various diseases like high blood pressure, heart diseases, cancer, diabetes and jaundice etc. were observed in the present investigation.Skin diseases are commonly noticed in the study area which appear in rainy season. *Calotropis procera* and *Melia azedarach* are two plant species which are

commonly used for skin diseases by local people.

It is also observed that medicinal properties are found in almost all identified plants, which people use in treatments for different types of diseases according to their knowledge. WHO (2008) has acknowledged that the traditional medicinal system has been used for thousands of years with great contributions made by practitioners to human health, particularly as primary health care providers at the community level and has maintained its popularity worldwide.

Some plants have been used for the treatment of practically all types of illnesses ranging from microorganism and neurological disorders etc., as well as primary sources of chemical substances for biologically active molecules that enhance pharmaceutical discovery over the past several decades (Bernstein et al., 2018; Kandanur et al., 2019). Prashant & Vidyalagar (2008) has observed that hundreds of medicinal plants worldwide are used in the traditional medicine as a treatment for skin diseases caused by bacteria, fungi and viruses. Easy availability of medicinalplants and their traditional indigenous knowledge is important in the formulation of herbal remediesand isolates bioactive constituents which are a precursor for semi-synthetic drugs. It is the most successful criterion for the development of new in drugs (Farnsworth, 1990, Cox & Balick, 1994 ; Fabricant & Farnsworth, 2001).

CONCLUSION

Ethnomedicines and traditional medicines have been the means of treatment for many types of diseases all over the world for years. Plants have been an important contributor to human life and life cannot be imagined without them. This has necessitated to the conservation of plant species of economic and medicinal importance. Efforts are being made through *in-situ* and *ex-situ* conservation practices to avoid extinction of such species from nature.

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