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Medicinally Important Flora of Dhibbia Karsal Village (Mianwali District Punjab)

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Abstract: Mianwali is the part of Salt range, which is considered as the field museum of the Pakistan. Medicinal and economically important, naturally occurring species of the Dhibbia Karsal Village were surveyed on the basis of the perception of local people. The local communities are extremely knowledgeable about the local plants but unfortunately this knowledge is going to be lost as a traditional culture is disappearing. Plants of thirty-eight different species belonging to different families of angiosperm having medicinal importance. Due to the salinity of the soil dominating species are perennial. *Olea ferruginea* Royle and *Acacia modesta* are two medicinally important characteristic trees of this area. *Olea ferruginea* due to extensive cutting and grazing has become rare species of the area. *Solanum nigrum, S. villosum, S. americanum* and *S. surattense* are common species of the area and exhibit great diversity in morphology. These species use commonly as the painkiller. They are very good source of tropane alkaloids. A trend of change in vegetation from forest to scrub and then to a treeless grassy area was observed. Factors responsible for loss of species diversity are mainly biotic and salinity of the soil.

Key words: Dhibbia Karsal, Mianwali, medicinal plants, *Olea ferruginea, Acacia modesta,* tropane alkaloids

INTRODUCTION

The use of plants for medicinal purposes is as old as human civilisation[1]. Medicinal herbs constitute an effective source of traditional and modern medicine[2]. From the ethno botanical point of view the sub-continent is considered an extremely important area[3]. According to an estimate in Pakistan up to 84% people depend upon traditional medicine for almost all kinds of medicine need[4]. All the systems of traditional medicine have their roots in the house remedies and this knowledge is transferred from one generation to other generation with the passage of time[5].

In the human civilisation plants have played a vital role. It is the fact that all the indigenous herbal or eastern system of medicine is entirely based on the properties of these plants. The importance of the herbal medicine can be well understood by the saying of Hippocrates "Let medicine be your food and food your medicine"[6].

Dhibbia Karsal is a village of District Mianwali situated in the south-western part of the Punjab province. It represents the plains of the western part of the salt ranges near the Sakesar hill[7]. It has boundaries with Bhakkar, Khushab, D.I. Khan and Bannu districts. It is included in the Sargodha Division. It's population is more than one million. About 79.22% people live in the rural area while 20.78% of people live in the urban areas[8]. Literacy rate of the city is very low i.e., 25%.

Average maximum temperature per annum is 47°C and minimum temperature is 19°C. Mean annual rainfall of the Mianwali is 334 mm and maximum rainfall occurs in the month of July i.e. 6.6 cm[7,9]. There are three types of soil sandy, clay and loamy in this city. Important crops of the city are wheat, Barely, Oat, Mustard, Eruca, Fennel, Peanut, Mong, Mash, etc[7,9]. Due to ruthless cutting of forest for fuel and timber purposes, the forest-covered area is very low. Mostly the area is arid, very small area is irrigated through the canals of river Indus[7].

Traditional herbal medicine is the best documented use of plants within the local community[10]. It has been found that traditional and homeopathic medicines are cheaper and often more accepted by large number of the people[11]. In Pakistan main source of medicinal plants is forest and rangeland. There are 50,000 registered hakims in Pakistan[12]. Mianwali has produced several hakims (local healers) famous not only locally but also the people from other parts of the country visit them. Many of them do not charge any thing for their service and treat the people free of cost.

The objectives of the present study were:

- To enlist the important medicinal plants of the area.

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- To record and compile a list of plants used in herbal remedies against infections.
- To acquire the ancient, unnoticed or unpublished information, from local herbalists (hakims and homeopaths).
- To characterise the active ingredients in the plants.

MATERIALS AND METHODS

The present research work was carried out through the simple method of field surveys in various parts of Salt Range. By talking to the old age people, key informants and local healers about the traditional uses of wild plants, a list of plants used in herbal remedies was compiled.

Throughout the field visit the plant specimens were collected and identified. Data were recorded, local names, place of collection, date of collection, part used, purpose of use and method of preparation were noted on the spot. Newspaper and a presser were used for the preservation of specimens and the newspapers were changed from time to time. The voucher specimens have been deposited in the herbarium of Quaid-I-Azam University, Islamabad, Pakistan.

RESULTS

The area was first time explored form ethno botanic point of view and thirty eight species of medicinal importance were recorded during the study. Most of the recorded species (75%) are perennial species. Special interest is in the plant species used to cure wounds and/or infections. Ethno botanical information along with active ingredients is shown in Table 1. Different parts of the plants use for the treatment of different aliments. The percentage use of different plant parts is calculated. This calculation is based on recorded species (Fig. 1). Most of the plants are important from socio economic point of view. The medicinal plant species recorded are not only the source of medicine for the people of this area; they also have some economic importance. Annually a large amount of medicinal plants is consumed for socio economic purposes resulting in the extinction of natural flora (Table 2).

DISCUSSION

Medical advantages of herbs have been known for centuries. Today according to World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine for their primary health care needs. The greater part of traditional therapy involves the use of plant extracts or their active principles[13].

Many examples contain powerful active compounds that help in healing the living organism[14]. Dhibbia Karsal a village of district Mianwali is a very good source of medicinal plants. Some important and tradable plants are the part of flora of this region. However resources are facing severe biotic interference. Overgrazing is a common phenomenon and it has very injurious effect on seedling growth. The natural vegetation of the area has changed from forest to scrub and treeless grassy area due to over grazing of cattles[15].

The plant is a biosynthetic laboratory, not only for chemical compounds, but also a multitude of compounds like glycosides, alkaloids etc. These exert physiological and therapeutic effect. The compounds that are responsible for medicinal property of the drug are usually secondary metabolites. Alkaloids, glycosides, neutral principles, resins, oleoresins, sesquiterpene lactones are some of the common active constituents of medicinal herbs[16].

This area is also under the pressure of continuous erosion that is why the vegetation is very scanty. The area is dominated by perennials like *Zizyphus mummularia*, *Rhazya stricta* and *Withania Coagulans*. The main reason for this type of predominance is salinity of the soil[7].

Acacia modesta is the medicinally and economically important species of the area. Bark of this tree is use for dying the leather. Wood is used for making door panels and its flowers are used for curing the heat stroke. People of the village used this species so extensively that it becomes rare in that area. Fruit, wood, flowers and bark of *Albizzia lebbeck* is commonly used for its antibacterial activity due to presence of saponins and tannins. It is helpful in relieving stress, anxiety and depression[17].

The Neem tree, *Azadirachta indica* (Meliaceae) is native to Southeast Asia and grows in many countries throughout the world[18]. The Neem tree has many medicinal uses. Notable among these are its use as an antiseptic and diuretic. It has been used to cure many illnesses from diabetes to syphilis and is widely relied upon by herbalists in its native habitat[19,20]. The use of *A. indica* as a source of natural insecticide was discovered approximately 30 years ago[21].

The whole Mianwali district is famous for *Withania coagulans*. This species is an important source of alkaloids like solanine, scopolamine and atropine. *Solanum nigrum* is also very common use for the treatment of hepatitis. These two species are also very important from commercial point of view (Table 2).

Another important species is *Caralluma tuberculata* commonly known as chunga and is member of family Asclepiadaceae very effective for diabetes is frequently

Table 1: Medicinal plants of Dhibbia Karsal village of Mianwali

Botanical name	Vernacular name	Family name	Part use	Use	Active compound
Acacia arabica (Lam.) Willd.	Kikar	Papilionaceae	Whole plant	Heat stroke, ulcer, regulation of menses, Painkiller.	Gum acacia
Achyranthus aspera L.	Puthkunda	Amaranthaceae	Fruit	Snake bite, fever, itching abdominal pains, ascites, dyspepsia, dysentery	achyranthine
Albizzia lebbek (L.) Benth.	Shirin	Mimosaceae	Fruit, wood, flowers and bark	Antibacterial, relieving stress, anxiety and depression	Saponins, tannins, albitocin, b-sitosterol, amyrin, 3,4,7-trihydroxyflavone, spinasteryl glucoside, machaerinic acid, lactone, methyl ester, acaci acid lactone
Aloe barbadensis Mill.	Kawar kandal	Liliaceae	Whole plant	Constipation, fever, menstrual irregularities, diabetes, gas troubles	Aloesin, Aloemannan, verectin
Allium cepa L.	Piyaz	Alliaceae	Bulbs and leaves	Laxative, wounds	allyl sulfur, quercetin,
Allium sativum L.	Lahsan	Alliaceae	Bulb	Digestive system disorders, heart diseases	allyl sulfur, allicin
Azadirachta indica (L.) A. Juss.	Neem	Meliaceae	Branches leaves	Toothache, astringent	azadirachtin
Boerhaavia coccinea Mill.	Itsit	Nyctaginac-eae	Leaves	Plaster on boils	piperine and zingerone
Calendula arvensis L.	Peeli buti	Asteraceae	Seeds and flowers	Useful in Khasra, stimulant and antispasmodic	Triterpenoid saponins, triterpine alcohols,
Calotropis procera (Ait) Ait.f.	Ak	Asclepiadac-eae	Roots, Flower, Branches and Leaves	Earache, antidote, pain killer for invisible injuries, dysentery, cough, ulcer, antitumor, expectorant and diuretic	Calotropine
Caralluma tuberculata N.E.Brown	Chaunga	Asclepiadaceae	Whole plant	Rheumatism, tonic, febrifuge and carminative	Polyoxypregnane glycosides
Convolvulus arvensis Linn.	Hiran khuri	Convolvulaceae	Leaves and root.	Effective in constipation, purgative and diarrheic, inhibit angeogenesis	Limonine, hexadecanoate, penta-, hepta- and nona-decanoate, octadecanoate and dicarboxylic acid derivatives. The rhizome contains a resinous glycoside (convolvuline) and tannin. The leaves are rich in tannin but contain less of the resin.
Chenopodium album L.	Bathu	Chenopodiaceae	Whole plant	Bandage for invisible injuries, Pain killer	ascaridol, geraniol, saponin, 1-limonene, p-cymene and d-camphor Volatile compounds of the leaves include: limonene (32.5 percent) and trans-pinocarveol (26.7 percent Hydrocyanic acid, geraniol, myrcene, camphor and methyl salicylate are also reported.
Citrullus colocynthus (L.) Schard.	Tumba	Cucurbitaceae	Seeds, Fruit, Roots	Used for stomach disorders, purgative, effective for constipation, antidote.	charantin, momordicin and foetidin; 5-hydroxytryptamine, diosgenin and p-sitosterol.
Cuscuta reflexa Roxb.	Akash bale	Convolvulaceae	Whole plant	Painkiller, anthelmintic, carminative, alternative, purgative and diuretic, jaundice	Convolvuline, tannin, hexadecanoate, penta-, hepta- and nona-decanoate, octadecanoate and dicarboxylic acid derivatives.
Datura stramonium L.	Dhatura	Solanaceae	Leaves, seed	Pain	Atropine, scopolamine and solanine
Datura innoxia Mill.	Dhatura	Solanaceae	Leaves and seeds	Wounds, snake bite	Solanaine, atropine and scopolamine
Dodonaea viscose (L.) Jacq.	Sanatha	Sapindaceae	Leaves	Stomach disorder, relieves pain, hypertension, fever and migraine	Guaranine(caffeine),heophyiline and theobromine

Table 1: Continued

Botanical name	Vernacular name	Family name	Part use	Use	Active compound
Eruca sativa Miller	Tara mira	Euphorbiaceae	Oil	Digestive system disorders	Diterpenoid, Scolymus compounds, Glycoside Sinigrin, Glucosinolate methyl sulphinyl butyl isothiocyanate.
Melia azedarach Linn.	Darak	Meliaceae	Leaves, Fruit, bark	Skin diseases, heat stroke and constipation.	Azadirachtin, margosine and tannin, glycerides of palmitic, oleic, linoleic and steric acids.
Launaea procumbens	Bhasvat	Asteraceae	Whole plant	Redness of eyes, achenes	Saliylic acid, vanillic acid, syringic acid, 2-methyl resorcinol and gallic acid
Peganum harmala L.	Harmal	Zygophyllaceae	Seeds, Branches	muscle pull., anathematic,	Harmalines
Fagonia cretica L.	Dhamea	Zygophyllaceae	Whole plant	Diabetes	Saponins and Polyphenols.
Ficus religious L.	Peepal	Moraceae	Roots, Bark	Blood diseases, effective for heat stroke.	flavonoids, tannin, mucilage, resin
Morus alba L.	Tut	Moraceae	Roots, Fruit, Leaves	Throat disorder, heat stroke, arterial pressure and myorelaxant	Morin
Morus nigra L.	Tut	Moraceae	Roots, Fruit, Leaves	Throat disorder, heat stroke, arterial pressure	Morin
Olea ferruginea Royle	Kao	Oleaceae	Leaves	Skin diseases	Olive oil
Plantago major L.	Ispaghul	Plantaginaceae	Seeds, Leaves, Roots	Used in dysentery, astringent and hypocholesterolemic	Psyllium husks, mucilage.
Rhazya stricta Decne.	Akari	Apocynaceae	Whole plant	Achenes and the removal of the heat effect	Alkaloids, flavonoids.
Solanum nigrum	Mako	Solanaceae	Fruit	Hepitatis, pain	Solanaine, atropine, scopolamine, Solasodine, Solasonin, Solamargine
Solanum americanum	Mako	Solanaceae	Fruit	Stomach disorders	Solanaine, atropine and scopolamine
Solanum villosum	Mako	Solanaceae	Fruit	Stomach diorders	Solanaine, atropine and scopolamine
Solanum surattense	Mokri	Solanaceae	Berries, leaves	Toothache, vomiting, snake bite	Solanaine, atropine and scopolamine
Tribulus terrestris	Bhakra	Zygophyllaceae	Whole plant	Antifungal, anticancer against cell lines	steroidal saponin
Withania coagulans Dunal	Panirband	Solanaceae	Fruit, Seeds	Stomach disorder, achenes and gas trouble	Withanolides
Woodfordia fruticosa	Dhawa	Lythraceae	Dry flowers, leaves	Diarrhoea, dysentery, cytotoxic against tumor cells	Invertase, woodfordin D, oenothein A and Woodfruticosin (Woodfordin C)
Zizyphus jujuba	Unab	Rhamanaceae	Leaves, fruit	Digestive system disorders and antiallergic	Oleanolic acid, C-AMP
Zizyphus vulgaris	Unab	Rhamanaceae	Leaves	Cooling, diaarhoea and dysentery	Oleanolic acid, C-AMP

Table 2: Annual consumption of Medicinal plants of Socio-economic values from Dhibbia Karsal

Botanical names	Vernacular name	Drug name	Consumption (kg/year)
Acacia arabica (Lam.) Willd.	Kikar	Kikar ki phali	50
Chenopodium album L.	Bathu	Bathuya	550
Cuscuta reflexa Roxb.	Akash bale	Tukham affiume	860
Melia azedarach Linn.	Darak	Tukham bakain	460
Solanum nigrum	Mako	Makao	4910 (all the three species)
Solanum americanum	Mako	Makao	do
Solanum villosum	Mako	Makao	do
Tribulus terrestris	Bhakra	Gokhro	3465
Withania coagulans Dunal	Panirband	Akari	3270

found on the hills. *Fagonia creatica*, *Rhazya stricta* and *Solanum surattense* are the typical medicinal plants of this area (Table 1).

In the village *Olea ferruginea* has become rare. The reason for its destruction was tree cutting for fuel and other domestic uses. It is a medium size tree commonly known as kao. Leaves of this tree are favorite for cattles. The plant is very nutritional and causes good health in the cattle and there by increases the production of the milk[22].

Another problem of the area like many other part of the Pakistan is unplanned introduction of exotic species.

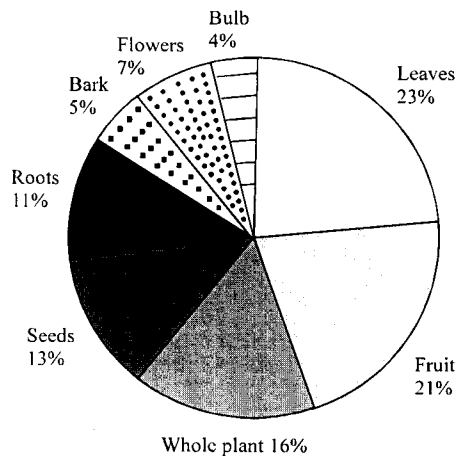

Fig. 1: Representing the percentage use of different parts of plants for the medicinal purposes

Eucalyptus species is one of the exotic species that effected the native vegetation badly.

We've been cautioned by conservationists that tropical species (and their contained compounds) are jeopardized by habitat destruction. Such habitat destruction could endanger sources of some of our current medicines[23]. One of the major problems for the medicinal plant extinction in Pakistan is collection of plants without planning. Different parts of the plants are used for medicinal purposes (Fig. 1). Usually the labor hired for the collection of the plants is untrained and uneducated. They are unaware, what they have to collect and which should not. Most of the times they uproot the whole plant. As a result 70-80% plant part get wasted and only 30-20% remains beneficial. Often wasted part of the plant contaminated the beneficial portion. In this way only 5-10% material is available for the medicinal use. This is clear that for each collection we destroy the huge plant resource[23].

For the long use of resources it is necessary to collect only the beneficial part of the plant and let the other to complete its life. The world will benefit from conservation of these species. The future discovery of new products from unexplored plants is dependent upon such conservation[23]. The best way to provide the plant material needed for medicine is to cultivate the plants. This is far better than collecting the plant material from the wild since it does not deplete wild stocks and in many cases; the declining habitats of native plants can no longer supply the expanding market for medicinal plant products. In the case of rare, endangered or over-exploited plants, cultivation is the only way to provide material without further endangering the survival of those species[13].

This area is a rich source of medicinal plant inspite of the fact that the vegetation of the area is under the stress of salinity of soil and biotic interference. People are highly knowledgeable for the traditional medicinal use of the plants. The only thing, needed is conservation of species and exploration of the area from the viewpoint of medicinal plants. Let's only hope someone finds them before the species and Tropical Medicine Chest become extinct. The survival of mankind is intimately dependent on the survival of forests.

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