

Ethnobotanical Studies of Some Medicinal and Aromatic Plants at Higher Altitudes of Pakistan

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Abstract: Pakistan is rich in biodiversity of medicinal and aromatic plants due to its diversified climatic conditions. In this regard district Buner, Swat and Chitral are identified as ideal region, where the local communities use these plants for medicinal and other ethnobotanical purposes. The main objective of the study was to determine the traditional ethnobotanical uses of the some medicinal and aromatic plants of the area that will be useful for further intense investigation by plant scientists, chemists and pharmacologist. The study revealed that the fifteen indigenous species are of great importance, traditionally used by the locals for different diseases like rheumatism, arthritis, muscular pain, cough, diabetes, fever and migraine etc and sold in drug market for earning as well.

Key words: Northern part of Pakistan • medicinal plants • local uses

INTRODUCTION

District Buner, Swat and Chitral are considered as an ideal region for natural flora and fauna of Pakistan and natural reservoir for the collection of a variety of medicinal plants. Some of which are used by the local for medicinal purpose, while some have pharmaceutical importance and other are used in folk medicines. District Swat lies between latitudes 34° to 36° North and longitude 72 to 73°E in the Malakand division of the North West Frontier Province. While District Buner has an area of 1760 km, lies between 34°-11' to 34°-43' N latitude and 72°-13' to 72°-45' E longitude. Buner is encircled by hills and separated from Swat valley by a range of mountain reaching to an elevation of 10,000 ft. Buner was a part of Swat district, which become a separate district in 1991. District Chitral covers an area of 14850 square kilometers situated in the North-western part of Pakistan. The tract lies between 35°-12' to 36°-50' N latitude and 71°-2' to 73°-53' East longitude. On the North West of the district is Afghanistan; to the South west are the districts of Dir and Swat, while the Gilgit area lies in the East. It is surrounded by the high mountains of Hindu-Kush and Karakoram and is separated from the rest of the country by the Hindu-Raj range.

Pakistan is gifted with a variety of herbs, medicinal and aromatic plant natural resources, due to its varied

ecological zones. Medicinal plants are found more abundantly in mountainous region than in plain areas. Plain areas also produce some important plants like *Calotropis procera*, used for 50 different diseases, including snakebite, skin, feet, ear and eye diseases. But the mode of administration of the drug is of special consideration, because this plant is poisonous if it is taken without using the techniques, for the drug. Mountainous regions provide a naturally conducive environment for the growth of medicinal flora. Considerable drugs have been extracted from the flora and still these areas possess a good potential for exploitation and utilization of medicinal and aromatic plants. In Himalayan ranges at least 70% of the medicinal plants and animals in the region consists of wild species, 70-80% of the population depend on traditional medicines health care [1]. Pakistan, especially Northern areas, are the best source for exporting the tradable medicinal plants on sustainable basis, if proper understanding developed between local communities and the end users. It can help in generating income source for indigenous people [2].

These valuable resources can be commercially exploited for the benefit of human being and economy of Pakistan, due to its potential for the development as sustainable sources of income to the local people, traders and allied industrial concerns. Medicinal plants continue to be extensively used as a major source of drugs for the

treatment of many health disorders all over the world. About 400-600 medicinal plant species out of a total of 5700 are estimated to exist in Pakistan. It is estimated that up to early 1970, 84% of Pakistani population was dependent on traditional medicines while an estimated 80% of the rural population of Pakistan still depends on traditional medicines for their primary healthcare needs [3]. Herbal remedies are the world's primary therapeutic arsenal to fight diseases. Western medicine needs to understand the botanical and cultural problems inherent in the traditional medicine [4]. 84% of the Pakistani population depended on traditional medicine for all or most of their medical needs. Hussein [5] reported several plant derived drugs and aromatic compounds. These include antimalarial agent from *Artemisia annua*, folklin from roots of *Coleus*, which is used for preventing the clotting of blood in reducing intraocular pressure in cases of glaucoma. Forskolol also act as an aid to nerve regeneration following trauma. The active organosulfur compound of garlic and onion are also useful for the cardiovascular agents.

Objectives:

1. To document the natural resources use pattern of the study area and indigenous knowledge associated with them.
2. To encourage the local communities especially the younger generation to propagate and protect the medicinal plants wealth in the study area.
3. To explore the possibilities of conservation and sustainable development of rare and endangered medicinal plants by involvement of rural communities in their native habitats.
4. To assess and identify the factors affecting biodiversity of medicinal and aromatic plants and indigenous knowledge of the area.

MATERIALS AND METHOD

This study was carried out during Summer, 2005. Information presented in studies are regarding to different villages of the three districts i.e. Buner, Swat and Chitral, which were randomly selected and people of the area were interviewed about the indigenous medicinal and aromatic plants. Before starting the research work, an overview of the study area were carried out. Questionnaire was prepared, pre tested and modified accordingly, to interview the people and extract the

indigenous knowledge about the plants. Surveying the locals of the study area and thorough review of the secondary information, gathered from number of book, treaties, published and unpublished papers, reports to confirm the ideas about the medicinal and aromatic plants given by the local communities. For field information frequent visits were arranged to various places, local drug markets and individuals. In Swat local drug markets at Madyan, Maindam, Fatehpure and Botany Department, Government Postgraduate Jahanzeb College were visited, information were collected and recorded. In Buner Elum mountain (9200 feet), Chursar, Aluksar, Katakamar, Joogianosar, Barazga and Mashay villages were visited. In Chitral Drosh, Mastuj and Kafriistan are were visited and information collected.

RESULTS AND DISCUSSION

Following plants were found of great importance throughout the investigated area. All these multipurpose plants are used traditionally by the locals for different diseases and sold in drug markets for earning as well.

- (1). *Aconitum voilaceum* Jacq ex, Staf
Family: Ranunculaceae
Habit: Herb
Part used: Rhizome
Local Name: Zarmoor, The Ghra Zahar
Local Uses: It is highly poisonous and administering as such may cause death or mental problems. Its rhizome are tied in the sheep or goat intestine and boiled thoroughly in the milk. The milk is discarded and the rhizome are crushed into powder and taken against rheumatism and arthritis.
- (2) *Artemisia indica*
Family: Asteraceae
Habit: shrub
Local name: Kharkhaliech
Part used: Seeds, leaves and fruits
Local Uses: Seeds, leaves and fruit are of medicinal value. These plant parts are dried and used in grounded form for stomachache, high blood pressure and diabetes and also effective as anthelmintic.
- (3) *Berberis lyceum* Royle
Family: Berberidaceae
Habit: shrub
Part used: Root bark, root, leaves and fruit
Local Name: Kwaray

Local Uses: Locally its dried bark from the root or its decoction is used as tonic and in nephrological complaints. Its use as astringent in gynecological disorder is recognized. Also used as typical antiseptic and is tied upon the fracture bones for healing and also considered as general body tonic. Berberis is astringent, carminative, febrifuge, ophthalmic (root) antibacterial and anticancerous. Root is used in eye treatment, for chronic diarrhea and piles. Berberine universally present in rhizome has marked antibacterial effects. It has also shown antitumour activity.

(4) *Bergenia ciliata* (Haw.) Sternb

Family: Saxifragaceae

Habit: Herb

Part used: Rhizome

Local Name: Chata pana, (Zakhm -e- hayat)

Local Uses: The rhizome is grinded into powdered form and used as anti-diabetic and expectorant. It is also a general body tonic. It is also used for pimple, sunburn, stomachache, muscular pain and running eyes.

(5) *Bistorta amplexicaulis* D. Don

Family: Polygonaceae

Habit: Herb Part used: Rhizome and root

Local Name: Tarwa pana

Local Uses: The rhizome is grinded into powdered form and is taken with a glass of water for the treatment of rheumatism and gout. Fresh ground root is applied internally in bolus to cure paralysis in cattle. Also used for fever as special tea during fever and flue.

(6) *Capparis spinosa* L.

Family: Capparidaceae

Local name: Kaveer

Habit: Shrub

Part used: Floral buds and fruits

Local uses: Flower, floral buds and fruits are used to treat jaundice, bronchitis, malaria. Floral buds are collected and soaked in a clay pot for 6 to 7 days then dried and used in making soups to treat the above mentioned diseases.

(7) *Colchicum leutium* Barker

Family: Liliaceae

Habit: Herb

Part used: Corm

Local Name: Qiamat valley

Local Uses: its dried corms are used for arthritis and rheumatism. Both its bark and seeds are sold for its precious rates in the drug markets.

(8) *Dioscorea deltoidea*

Local name: Kanis

English name: Elephant's foot found between 1800m and 2200m, normally on the border of forests

Uses: Locally, roots used as a soap substitute. The rhizomes of *Dioscorea deltoidea* are a source of diosgenin, a steroidal sapogenin used as raw material for production of steroidal drugs which include cortico steroids, sex hormones, oral contraceptives and anabolic agents.

(9) *Morchella esculanta*

Family: Halvelaceae

Habit: Fungal mycelium

Part used: whole fruiting body

Local Name: Gujhai

Local Uses: whole fruit body were eaten in the breakfast for its delicious taste. It is considered as general body tonic. *Morchella* is one of the important and precious fungal plant, which can play very important role in the economy the area of Pakistan. It is growing under the shady plants during March to mid May on 1500 – 25000 meter height. *Morchella* is of special interest in a sense that it is collected by women and children during visit in the form of groups when they come for the collection of fuel wood. *Morchella* collected by the local are sold to the people of high profile and traders with a price Rs. /-3500 per Kg Dried *Morchella*. It is also known that *Morchella* is also sending to Europe and some other countries as well.

(10) *Paeonia emodi* Wall. Ex Hooker. f

Family: Paeoniaceae

Habit: Herb

Part used: Rhizome

Local Name: Mamekh

Local Uses: The powdered rhizome is used with milk for curing of backache and general weakness. Rhizome are dried and cut in to small pieces and mixed with Geranium and boiled in milk. This milk is used daily one up to the curing. Also used for headache, dizziness, vomiting and to aid pregnancy

(11) *Pistacia integrima* Stew. Ex Brandis

Family: Anacardiaceae

Habit: Tree

Local Name: Kakar Singhi/ Shanai

Local Uses: Used for fuelwood and medicine to treat colds and coughs and jaundice.

(12) *Podophyllum hexandrum* Wall

Family: Podophyllaceae

Habit: Herb

Part used: Rhizome. Fruit and seed

Local Name: Kakora

Local Uses: Powdered rhizome with some other plants is used to control jaundice and other liver diseases. Fruits are eaten for general body tonic, seed are crushed to powder and used with a glass of water.

(13) *Saussurea atkinsonii*. C.B. Clarke

Family: Asteraceae

Habit: Herb

Flowering period: July- September Part used: seeds/root

Local Name: Sharshamay

Local Uses: The seeds are known as carminative; used for horses, also considered as cure for horse bite. Also used for sore throat. It root is anodyne, antibacterial, antispasmodic and aphrodisiac.

(14) *Valerian jatamansi* Jones

Family: Valerianaceae

Habit: Herb

Part used: Rhizome

Local Name: Mushke Bala

Local Uses: The rhizome yields aromatic oil, which is used in of tranquilizers, in suppression of urine and in perfumed powders. It is also used in some antispasmodic and carminative drugs.

(15) *Viola serpens*. Var. *Canescens* Wall. Ex Roxb.

Family: Voilaceae

Habit: Herb

Part used: Flowers and leaves

Local Name: Banafsha Local Uses: Used for sore throat and is collected for earning cash. It is good carminative agent. Flowers are mixed with leaves and boiled in water. The mixture is used for cough, fever and migraine, relieve liver congestion and Sinus.

Threats: Invasive species have devastating affect the native flora due to competition and allelopathy and is big threat to the biodiversity of the area and Pakistan.

Some of the important plants like *Valeriana jatamansi*, *Saussurea* spp., *Paeonia emodi* and *Podophyllum hexandrum* and *Morchella* spp. are under severe pressure due to ethnobotanical collections. These plants may face a local extinction in future if constantly being exploited at such rates. High summer pastures are the focus area for collection of most of the plant species and additionally intense grazing has posed a serious threat to these areas. These plants are sold in

the market on very low prices by the people of the area, because people especially women and children collect these plants as side business.

CONCLUSIONS AND RECOMMENDATIONS

- Traditional knowledge of herbal medicine is disappearing. Above the 50 years old people of the area have valuable wealth of information about the use of the indigenous medicinal plants, which should be conserved through conduct of surveys. This gives the base line information for the chemist to discover new drugs for different diseases.
- All the medicinally important plants should be analyzed to study their chemical constituents.
- Pakistan is rich in medicinal and aromatic plants. Intellectual Property Rights (IPR) must be secured for Pakistan.
- There is an overriding need of awareness program in the area about the importance of the indigenous flora, sustainable plants collection and conservation of important medicinal plants. Such programs can be initiated by different, public and private institutions in collaboration with social welfare and scientific organizations and industries.
- The local community especially young generation should be encouraged to actively involve themselves in conservation practices.
- Cultivation of indigenous medicinal plants and aromatic plants will create new openings for the uplift of poor locals and economy of Pakistan and will also reduce pressures on wild population. A long-term ethnobotanical program that may address the issue will be a great demand in future.

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