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Ethnopharmacological Survey of Some Medicinally Important Plants of Galliyat Areas of NWFP, Pakistan

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Abstract: Ethnopharmacological survey was conducted in Galliyat areas of Tehsil Abbotabad (NWFP) Pakistan. Being apart from city the local people preferably use medicinal plants for their common ailments by traditional methods. Galliyat is dressed up with a wide range of medicinal flora. Indigenous plants are interactively associated to the culture and traditions of local peoples. So ethnopharmacological survey yielded interesting results. The survey comprised plant-collection trips, interviews and meetings with local people and rural herbalists. In a total of 41 wild plant species, belonging to 40 genera of 33 families were used by local inhabitants, for medicinal purposes.

Key words: Ethnopharmacology, medicinal plants, galliyat, Pakistan

INTRODUCTION

Galliyat is a highly mountainous tract, situated in Southeast of NWFP (Pakistan). It comprises many areas, each of which is called "Gali", so the area is known as Galliyat. It is located at 33-35°N latitude and between 73-74°E longitude^[1].

The area falls under Sub-Tropical Pine Forests and Himalayan Moist Temperate Forests. Climatic conditions are very cool and sub-humid. Dominant vegetation comprises conifers. Two species of conifers i.e. *Pinus wallichiana* and *Abies pindrow* forming most of the top canopy. Other arboreal vegetation comprises a wide variety of gymnosperms and angiosperms including *Cedrus deodara*, *Taxus baccata*, *Prunus padus*, *Pinus roxburghii*, *Acer caesium*, *Ulmus villosa*, *Aesculus indica*^[2]. Major herbs and shrubs forming most of the medicinal flora includes *Asparagus adscendense*, *Skimmia laureola*, *Hedera nepalensis*, *Berberis lycium*, *Urtica dioica*, *Swertia chirata*, *Origanum vulgare*, *Thalictrum minus*, *Punica granatum* and *Rosa brunonii* etc.

Ethnopharmacology is the branch of knowledge dealing with interaction between local people and the indigenous vegetation for their use as medicines and in curing common ailments. The use of medicinal plants plays an important role in the lives of rural people^[3], especially in the developing countries of the world, which are poorly served with modern health facilities. Much of the world's population depends upon traditional medicines to meet daily health requirements, usually more than 80% in developing countries of the world^[4]. The two most reliable system i.e. Ayurvedic and Unani system of medicines played an important role in providing health facilities to poor rural people.

In the recent past ethnopharmacology has got enough attention. A lot of work has been done in this field in many countries of the world. Unfortunately no considerable work has been done so far in this field in Pakistan^[5]. Due to the importance of ethnopharmacological studies many medicinally important plants are over harvested and exported extensively e.g. *Ephedra sinica* is a very important medicinal plant. It has been used for a variety of medicinal uses from treating cold, asthma and hay fever to various kidney ailments. One of the compound isolated from *Ephedra*, pseudoephedrine, is used in many pharmaceutical decongestants and antiasthmatic medicines and various herbal preparation^[6]. Ephedrine, the active alkaloid in *Ephedra sinica*, was first isolated and characterized by a Japanese chemist, N.M. Nagai in 1887. However, his work was not recognized by the West, until, in 1924, when K.K. Chen and C.F. Schmidt, of the Peking Union Medical College began to publish a series of papers on the pharmacological properties of ephedrine^[7].

Berberis lycium Royle (family: Berberidaceae) is also a very important medicinal plant and its bark is very effective against diabetes, scabies, pustules, internal wounds and bone fractures^[5].

In Pakistan there is a need to explore this natural treasure. Alongwith their medicinal uses they can also be used for poverty alleviation. Including Galliyat most of the hilly areas of Pakistan veil rich medicinal flora. The present study was designed to induce ethnopharmacology in Pakistan with following objectives.

- To document the indigenous knowledge of medicinal plants.
- To explore potential sources of new forest products and drug plants.

MATERIALS AND METHODS

The present research was carried out through field surveys in various parts of Galliyat, in 2003-04. Interviews were taken from local elder people and herbalists, using a questionnaire containing vernacular name of plant, habit and habitat, part used and indigenous uses. Repeated queries were made to get the data confirmed. The fresh plants were collected usually with flowers or fruits, for correct identification. Plant specimens were pressed, dried, identified with the help of flora of Pakistan^[8]; confirmation of plants was made in the herbarium of Quaid-e-Azam University, Islamabad.

The plants were mounted and voucher specimens are deposited in Herbarium of Quaid-e-Azam University, Islamabad for future references.

RESULTS AND DISCUSSION

Traditional knowledge reported for medicinal usage of 41 plants of 40 Genera belonging to 33 families is presented in alphabetical order. Botanical name followed by their vernacular name, family, habit and habitat, part used and ethnopharmacological uses.

Achyranthes aspera L.

Vernacular name: Puth kanda, Chooron.

Family: Amaranthaceae.

Habit and habitat: It is a common herb/weed.

Part used: Whole plant.

Ethnopharmacological uses: Decoction of both leaves and roots is used for toothache. It is also used for abdomen pain and bowel complaints. The paste of the leaves is applied over insect bite.

Adhatoda vasica L.

(Synonym: *Justicia adhatoda* Nees)

Vernacular name: Bhekkar.

Family: Acanthaceae.

Habit and habitat: It is a shrub found on dry places, along roadsides and in stony soil.

Part used: Young branches and leaves.

Ethnopharmacological uses: Extract obtained from the leaves, leaf buds and young branches are very bitter and is used early morning daily, against diabetic, itch, pustules and scabies. It is very drying and butter or deesi gee is used after its use.

Aesculus indica (Wall Ex. Camb.) Hook. f.

Vernacular name: Ban-khor.

Family: Hippocastanaceae.

Habit and habitat: It is a tree found in moist temperate regions.

Part used: Fruits.

Ethnopharmacological uses: Oil extracted from fresh fruits is externally used against wounds and bruises.

Althea rosea L.

Vernacular name: Gul-khaira.

Family: Malvaceae.

Habit and habitat: It is an herb, which is commonly found along roadsides.

Part used: Roots.

Ethnopharmacological uses: Small pieces of roots are soaked in water for 24 h, which becomes concentrated. This mixture is used early morning daily and is useful against jaundice, liver complaints and bowel problems.

Artemisia fragrans L.

Vernacular name: Chao.

Family: Asteraceae (Compositae).

Habit and habitat: It is common on dry places.

Part used: Leaves.

Ethnopharmacological uses: Extract from the leaves is used as anthelmintic in very small amounts. It is also used against wounds, earache and toothache and asthma.

Asparagus adscendens Roxb.

Vernacular name: Sufaid musli, Sunmbli.

Family: Liliaceae.

Habit and habitat: It is a shrub, which is very uncommon and is found in moderate environmental conditions.

Part Used: Roots.

Ethnopharmacological uses: Roots are used as tonic, also useful in diarrhea, dysentery and general debility.

Berberis lycium Royle.

Vernacular name: Sumbal, Kashmal.

Family: Berberidaceae.

Habit and habitat: It is found in hilly areas with moderate climatic conditions.

Part used: Whole plant.

Ethnopharmacological uses: Bark is dried and powdered. Powdered bark is locally used in dysentery. Plant bark is used for internal wounds and throat pain. The bark of the root is soaked in water and the extract is used against diabetes, scabies and pustules. Paste of the root powder is used in bone fractures.

Bergenia stracheyi (Hook. f. and Thoms.) Engl.

Vernacular name: But-phay.

Family: Saxifragaceae.

Habit and habitat: It is an herb found along moist, stony places.

Part used: Roots.

Ethnopharmacological uses: Powder obtained from dried roots is applied externally on wounds. A mixture of root powder, milk and sugar is dried and is taken early morning against ulcer of large intestine.

Cedrus deodara (Royle. Ex. Lamb) Loud

Vernacular name: Deodar, Diar.

Family: Pinaceae.

Habit and habitat: It is a tree commonly found in cold and moist hilly areas.

Part used: Stem.

Ethnopharmacological uses: Stem is cut into small pieces, which are boiled in water, sieved and cooled down. This extract containing oil is called as "Lou" and is used as aphrodisiac.

Cissampelos pareira L.

Vernacular name: Ghori sumbi, Pla-jari.

Family: Menispermaceae.

Habit and habitat: It is a herbaceous climber found in moist places.

Part used: Leaves and stem.

Ethnopharmacological uses: Extract from fresh leaves and stem is mixed with sugar and used against diarrhea and dysentery.

Convolvulus arvensis L.

Vernacular name: Lehli.

Family: Convolvulaceae.

Habit and habitat: It is a weed found as trailer or climber on open places.

Part used: Whole plant.

Ethnopharmacological uses: The roots are used as purgative. Spinach of the plant is used against constipation.

Dryopteris ramosa

Vernacular name: Pakha.

Family: Aspidiaceae.

Habit and habitat: It is a fern found in moist and shady places.

Part used: Young leaves.

Ethnopharmacological uses: Young leaves are collected in March-May as a vegetable and are used as spinach against gastric ulcer, constipation and as aphrodisiac.

Euphorbia wallichii

Vernacular name: Herwi.

Family: Euphorbiaceae.

Habit and habitat: It is an herb found mostly along rocks and roadsides.

Part used: Milky juice of stem.

Ethnopharmacological uses: Milky juice of stem is applied on defective organs externally for healing of wounds. It is also toxic.

Ficus glumerata Wall. Ex Roxb.

(Synonym: F. palmata Forssk)

Vernacular name: Phagwar.

Family: Moraceae.

Habit and habitat: Commonly found in temperate regions.

Part used: Fruits and leaves.

Ethnopharmacological uses: Fruits are eaten against constipation and are also eaten against lungs and urinary diseases. Fresh leaves are boiled in the milk of goat and are used for bowel problems. Leaves are also eaten in the form of spinach for gastric diseases.

Fragaria nubicola Lindle. Ex. Lacaita

Vernacular name: Pung-akha.

Family: Rosaceae.

Habit and habitat: It is an herb found in moist places.

Part used: Leaves.

Ethnopharmacological uses: Powdered leaves with leaves of *Berberis lycium* are used against gastric ulcer, as antiseptic and against wounds. Their extract can also be used.

Galium aparine

Vernacular name: Kuchan.

Family: Rubiaceae.

Habit and habitat: It is an annual herb found in moist places.

Part used: Whole plant.

Ethnopharmacological uses: The whole plant is used against wounds in the form bandage around the wound. Extract of the plant is used against jaundice, once a day.

Geranium wallichianum D. Don Ex. Sweet

Vernacular name: Ratan-jaut.

Family: Geraniaceae.

Habit and habitat: It is an herb, found in moist places.

Part used: Dried leaves and roots.

Ethnopharmacological uses: Powder of dried roots is mixed with milk and sugar and is used as antispasmodic and for joint pain.

Hedera nepalensis K. Koch

Vernacular name: Albhambar.

Family: Araliaceae.

Habit and habitat: It is a climber found climbing upon conifers and is present in moist temperate regions.

Part used: Leaves and stem.

Ethnopharmacological uses: Leaves and branches are dried and the powder so obtained is used against diabetes early morning daily.

Juglans regia L.

Vernacular name: Akhrot, Akhore.

Family: Juglandaceae.

Habit and habitat: Commonly found in moist temperate areas, but also found successful in dry areas.

Part used: Fruits, leaves, rind of fruit, bark of the stem and roots.

Ethnopharmacological uses: Fruits are eaten. Leaves, rind of fruit and bark (locally called Dandasa) are used for cleaning teeth and gums. They are also useful for mouth ulcer, toothache and as antiseptic.

Mentha royleana L.

Vernacular name: Podina, Podna.

Family: Lamiaceae (Labiatae)

Habit and habitat: It is herb commonly found along streams and moist places.

Part used: Leaves.

Ethnopharmacological uses: Powdered obtained from dried leaves, mixed with *carum copticum* is used to stop vomiting. Decoction of leaves is used against cough, flue and diarrhea. Dried leaves are also used as carminative.

Myrsine africana L.

Vernacular name: Khookhal.

Family: Myrsinaceae.

Habit and habitat: Commonly found in moderate climatic conditions.

Part used: Seed and fruit.

Ethnopharmacological uses: Fruits are eaten. Seeds are dried and the powder is used against cough.

Oxalis corniculata L.

Vernacular name: Khatti booti, Khat-mith.

Family: Oxalidaceae.

Habit and habitat: It is an herb found along shady places.

Part used: Whole plant.

Ethnopharmacological uses: Juice of the plant is given in stomach trouble, used to relieve the intoxication produced by Thornapple. Decoction of roots is useful for worms, to clean rusted vessels. The extract of the plant is applied in case of scorpion sting.

Pinus roxburghii Sargent

Vernacular name: Chirr.

Family: Pinaceae.

Habit and habitat: It is a gymnosperm commonly found in hilly areas with cold climatic conditions.

Part used: Wood and resin.

Ethnopharmacological uses: Wood is used to cool the burning sensation of the body. Wood and resin wood is used in snakebite and scorpion sting. Water with a small amount of resin in it is used as antiseptic.

Plantago lanceolata L.

Vernacular name: Butti, Chamchi-patra.

Family: Plantaginaceae.

Habit and habitat: It is found along streams and moist places.

Part used: Seeds.

Ethnopharmacological uses: Seeds are chewed as carminative and against dyspepsia. Seeds are also used in powder form.

Polygonum amplexicaule D. Don

Vernacular name: Masloon.

Family: Polygonaceae.

Habit and habitat: It is an herb mostly found in shady and moist places.

Part used: Fresh roots and leaves.

Ethnopharmacological uses: Decoction of fresh roots and leaves is used against cold, fever and as restorative.

Punica granatum L.

Vernacular name: Anar, Daruni.

Family: Punicaceae.

Habit and habitat: It is a moderate size tree found in moist as well as dry places.

Part used: Fruit, rind of fruit, roots and seeds.

Ethnopharmacological uses: The seeds are used as stomachache, pulp is used as cardiac and stomachache. Rind of the fruit is dried (Daryack) and grinded and the powder is used against diarrhea. Fresh juice has cooling and refrigerant effects. Stem bark and root are dried and are used as anthelmintic in powder form.

Quercus leucotrichophora A. Camus.

(Synonym: *Q. incana* Roxb.)

Vernacular name: Rein, Shah baloot.

Family: Fagaceae.

Habit and habitat: It is found in moist temperate, hilly areas.

Part used: Corm and wood.

Ethnopharmacological uses: Corm is used as astringent and diuretic. It is also given in diarrhea, indigestion, asthma and gonorrhoea.

Rosa brunonii Lindle.

(Synonym: *R. moschata* Auct. Non J. Hermann)

Vernacular name: Turni, Chal.

Family: Rosaceae.

Habit and habitat: It is a shrub fairly common in every climate.

Part used: Flowers.

Ethnopharmacological uses: Flowers are boiled in water and the extract is used against constipation and gastric problems.

***Rubus fruticosus* Linn.**

Vernacular name: Kanachi, Karwara.

Family: Rosaceae.

Habit and habitat: It is a shrub found in shady and moist places.

Part used: Fruit and leaves.

Ethnopharmacological uses: Fruits are eaten and are cooling. Decoction of old leaves is used for cough, diarrhea, fever and also used as a diuretic.

***Rumex hastatus* D. Don**

Vernacular name: khatimmer, Khatta matta.

Family: Polygonaceae.

Habit and habitat: It is an herb commonly found in dry places.

Part used: Roots.

Ethnopharmacological uses: Roots are dried and boiled in water and the extract is used against jaundice early morning daily.

***Rumex nepalensis* D. Don.**

Vernacular name: Hoola, Jungli palak.

Family: Polygonaceae.

Habit and habitat: It is an herb found along shady and moist places.

Part used: Leaves.

Ethnopharmacological uses: Leaf extract is antiseptic and used to stop bleeding. It is also used against allergy caused by leaves of *Acacia nilotica*.

***Saussurea heteromalla* (D. Don.) Hand.**

Vernacular name: Kali Ziri.

Family: Asteraceae (Compositae).

Habit and habitat: It is an herb commonly found in open places.

Part used: Seeds.

Ethnopharmacological uses: The seeds are used as carminative. They are also used as a cure of horse bite.

***Skimmia laureola* M. Roem**

Vernacular name: Nair.

Family: Rutaceae.

Habit and habitat: It is a shrub, which is commonly found in cold and moist habitat.

Part used: Leaves, branches and roots.

Ethnopharmacological uses: Smoke of the burning branches is thought to be useful against various diseases. Paste of the roots is used as antidote to snake and scorpion bite.

***Solanum nigrum* L.**

Vernacular name: Mako, Kuchmach.

Family: Solanaceae

Habit and habitat: Frequently found in moist places, but also found in dry places.

Part used: Leaves and branches.

Ethnopharmacological uses: Extract of the leaves is used as washing for painful eyes. Fruits are eaten for stomachache. Heart patients use it as spinach.

***Sonchus asper* (L.) Hill**

Vernacular name: Hund.

Family: Asteraceae.

Habit and habitat: It is commonly found on moist places.

Part used: Leaves and roots.

Ethnopharmacological uses: Decoction of leaves and roots is used against fever and burns. The plant is also used against diabetes, scabies, itching, constipation and heart problems in the form of spinach.

Swertia chirata

Vernacular name: Chirata, Chiraita.

Family: Gentianaceae.

Habit and habitat: It is an herb found on moist places in hilly areas.

Part used: Whole plant.

Ethnopharmacological uses: Extract from the leaves and stem is mixed with sugar and is used against every kind of fever and malaria.

***Taxus baccata* L.**

Vernacular name: Bermi.

Family: Taxaceae.

Habit and habitat: It is a large size tree found in moist, hilly areas.

Part used: Fruits and stem.

Ethnopharmacological uses: Decoction of the stem is used early morning against tuberculosis. Ripen fruits are also eaten.

Thalictrum minus

Vernacular name: Momera.

Family: Ranunculaceae.

Habit and habitat: It is a shrub, found in moist and shady places of hilly areas.

Part used: Leaves and young branches.

Ethnopharmacological uses: Extract is obtained from young branches and leaves. Few drops of the extract are used for eye problems, daily before sleeping.

***Trichodesma indica* (L.) R.Br.**

Vernacular name: Hundusi.

Family: Boraginaceae.

Habit and habitat: It is an herb found along roadsides and stony places.

Part used: Whole plant.

Ethnopharmacological uses: Extract of the whole plant is mixed with sugar and is used against diarrhea, dysentery and urinary problems. It is also cooling and refrigerant.

***Viola canescens* Wall. Ex. Roxb.**

Vernacular name: Banafsha, Swar phul.

Family: Violaceae.

Habit and habitat: It is an herb found on moist and shady places.

Part used: Whole plant.

Ethnopharmacological uses: Leaves, flowers or the whole plant is boiled in water along with little amount of sugar and the decoction is used for cough, cold and flue.

***Zanthoxylum alatum* Roxb.**

(Synonym: *Avecinnia officinalis*)

Vernacular name: Timber, Timmer.

Family: Rutaceae.

Habit and habitat: It is a shrub, commonly found in moist areas.

Part used: Fruit, seed and branches.

Ethnopharmacological uses: Fruit is used against dyspepsia, as a carminative and stomachache. Branches are used as toothache and as a Muswak (toothbrush).

DISCUSSION

Ethnopharmacological survey was conducted in Galliyat areas of Tehsil Abbotabad (NWFP). Various areas of Galliyat region are enriched with useful medicinal plants. A total of forty-one medicinally important plant species belonging to 33 different families were reported during research work. Based upon the indigenous knowledge reported during study it can be avidly sought that the area comprises a valuable medicinal flora. Most of the plants used medicinally are very important and used extensively. Due to their extensive usage they are overharvested. For example *Skimmia laureola*, *Asparagus adscendense* and *Taxus baccata* have become endangered due to their extensive and mismanaged uses.

There is no immediate conservation practice for this valuable medicinal flora, it is also found that some

important medicinal plants e.g. *Skimmia laureola* are extensively used by the local Pensaries (Herb sellers) without any concept of their extinction. They pay few rupees to local children, which collect the plant for them. As a consequence now days no single specimen of the specie can be seen alongside the road and reachable places. *Asparagus adscendense* is also a rare plant in the area, as its roots are used as tonic, against diarrhea, dysentery and general debility.

Due to lack of ethnopharmacological studies, there is no conservation of indigenous knowledge. Majority of the young people doesn't know even about very important medicinal plants. The government should start such awareness programs, so that local people can participate in the conservation of medicinal plants.

Moreover to prevent the extinction of medicinal plant species, efforts should be made to protect the endangered plant species, by creating awareness in local people and giving incentives to them for participation. Conservation practices may be started to avoid such losses.

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