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PRIORITIZATION OF MEDICINAL PLANTS OF MARGALA HILLS NATIONAL PARK, ISLAMABAD ON THE BASIS OF AVAILABLE INFORMATION

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Abstract

In order to understand the pattern of indigenous uses of medicinal plants available in Margalla Hills National Park, Islamabad, this study was undertaken through literature survey and field work conducted in late April/May 2008. The people of the park are using medicinal plants for various ailments and dependent on surrounding plants resources for their food, shelter, fodder, healthcare and other cultural purposes. However, encroaching industrialization and accompanying changes in their lifestyles are responsible for decrease of practice in local uses of herbs as medicine, it is, therefore worthwhile to record the natural uses of these herbs before the information is lost. For study purpose 64 informants were interviewed to find out the medicinal uses of these plants. In total 40 species of medicinal plants belonging to 18 families were recorded which are being used by inhabitants of the park, these are *Carissia opaca*, *Cassia fistula*, *Mallotus phillippensis*, *Punica garmatum* and *Phyllantus emblica etc.* Their medicinal uses were noted by categorizing them into major diseases. The medicinal flora identified should be conserved for present and future generations.

Introduction

Any plant, which includes materials that can be used for curative purpose or which is an inventor for production of useful drugs is a medicinal plant. The plants that posses healing properties or exert advantageous pharmacological effects on the animal body are generally nominated as "Medicinal Plants". Medicinal plants make up the pedestal of heath care systems in many societies. The recuperation of the facts and practices associated with these plant resources are part of an important approach associated to the conservation of biodiversity, the discovery of new medicines, and the improvement of the quality of life of poor rural communities. The medicinal properties of plant species have made an exceptional input in the beginning and improvement of many conventional herbal therapies. These traditional knowledge systems have started to disappear with the passage of time due to insufficiency of written documents and relatively low income in these traditions. However, due to the lesser side effects of medicinal plants with respect to allopathic medicine, medicinal plants regained a wide appreciation.

People living in tribal localities and in villages are using indigenous plants as medicines from long ago because this knowledge reaches them through generations, and is based on experience. Also the tribes and villages are far away from cities and mostly there are no health amenities (Shinwari & Khan, 1998). Islam *et al.* (2006) surveyed Shawar valley in north area of Pakistan for the analysis of weeds as well as medicinal

plants. These folk medicinal plants have noteworthy role in the primary health care of the residents of Shawar valley. Especially the people who cannot afford allopathic drugs are tempted to use such medicinal plants. Qureshi & Ghufran (2007) conducted the study in Attock and documented indigenous knowledge of some wild plants used for medicinal purposes. Management also requires understanding of local perceptions, knowledge and decision-making systems relating to resources and the impact of harvesting the perceptions and knowledge of local users (Ghimire *et al.,* 2005). Ahmad (2007);Ahmad and Zahoor (2008) and Ahmad *et al.* (2009) conducted a study around road verges of motorway and Havalian city to identify the medicinal flora, highlighted its medicinal importance and stressed conservation of native In Pakistan, nearly 50% of the drug presently used in modern medicine is prepared naturally from petrochemical-based raw material (Hussain, 1987). Hocking, (1958) estimated that in early 1950 up to 84% pf Pakistani population was dependent on traditional medicine for all or most of their medicinal needs. This study mainly focused on information regarding traditional uses of plants. The information was obtained through interviews with locals and hakims.

Materials and Methods

The data collected from MHNP during field trips made in April/ May 2008. Regular field trips were made for data collection. Interviews of local inhabitants were conducted. Questionnaire was adopted for interview and informants include local residents and herbalists. The collected information's were crossed checked with available literature as well. Plant specimens collected were preserved in herbarium of Fatima Jinnah Women University, Rawalpindi. Plants were identified using Flora of West Pakistan by Nasir and Ali (1972).

Results

The data collected are arranged in alphabetical order and given as family name, part used and uses.

Family: Acanthaceae
1. Scientific name: *Justicia adhatoda* L.
Local name: Bheaakr
Part used: Leaves, root, flowers, stem bark
Uses: The roots are useful in asthma, bronchitis and other chronic coughs. Dried leaves are used in the treatment of bronchial asthma. It is also indicated in the treatment of internal haemorrhage, cough, local bleeding, thrombocytopenia and pyorrhoea.

Family: Amaranthaceae
2. Scientific name: *Achyranthes aspera* L.
Local name: Poth Kant
Part used: Whole plant
Uses: Decoction of both leaves and roots are used for toothache. It is also used for abdominal pain. The juice of the herb is given in dysentery, rheumatism and skin diseases. The pasts of the fresh leaves is applied over insect bites. An infusion of the root is used for bowel complains, night blindness and skin diseases. The ash of the plant with honey is given in seasonal cough and asthma.

3. Scientific name: *Achyranthes bidentata* Blume.
Local name: Not known
Part used: Roots, leaves and stems
Uses: They are anodyne, anti-inflammatory, anti rheumatic, bitter, digestive, diuretic, emmenagogue and vasodilator. They act predominantly on the lower half of the body and are used in the treatment of aching back and knees and asthenia of the lower limbs. The herb is taken internally to treat hypertension, back pains, urine in the blood, menstrual pain, bleeding *etc*.

4. Scientific name: *Amaranthus viridis* L.
Local name: Chaulai
Family: Amaranthaceae
Part used: Leaves
Uses: the leaves are used as emollient and are used in amenorrhea. Also used in scorpion sting and snake bite.

Family: Apyocynaceae
5. Scientific name: *Carissa opaca* Stapf ex Haines
Local name: Granda
Part used: Stems, leaves, fruits
Uses: It cures fever. It is good in eye disorders. Fruit of the plant mixed with roots of the M*imosa pudica* is taken as aphrodisiac.

6. Scientific name: *Nerium oleander* L.
Local name: Kaner
Part used: Whole plant.
Uses: The leaves and the flowers are cardiotonic, diuretic, emetic, expectorant and sternutatory. A decoction of the leaves has been applied externally in the treatment of scabies, and to reduce swellings. This is very poisonous plant, containing a powerful cardiac toxin, and should only be used with extreme caution. The root is powerful resolvent. Because of its poisonous nature it is only used externally.

Family: Asteraceae
7. Scientific name: *Carthamus oxyacantha* M. Bieb.
Local name: Pholi
Part used: Flowers, leaves
Uses: The flowers are considered as stimulant, antispasmodic and emmenagogue. Leaves are the locally applied to wounds.

8. Scientific name: *Lactuca serriola* L.
Local name: Kahu
Part used: Whole plant.
Uses: The herb is used as cooling, sedative, diaphoretic, diuretic, antiseptic, hypnotic, expectorant useful in the treatments of coughs in phthisis, bronchitis, asthma and whooping cough.

9. Scientific name: *Sonchus arvensis* L.
Local name: Dodal
Part used: Whole plant

Uses: The plants are known as diuretic, sedative, cooling, hypnotic, diaphoretic, antiseptic and expectorant; useful in cough and bronchitis, asthma and phthisis. The root is used in jaundice.

10. Scientific name: *Taraxacum offcinale* Weber.
Local name: Hand, Dudal
Part used: Leaves, roots
Uses: The leaves are used for fomentation. The roots are aperient, diuretic and tonic; used as remedy for chronic disorder of kidneys and liver.

11. Scientific name: *Parthenium hysterophorus* L.
Local name: Not Known
Parts used: Roots, stems
Uses: It is applied externally on skin disorders and decoction of the plant is often taken internally as a remedy for a wide variety of ailments, to be used as tonic, febrifuge, and emmenagogue. Root decoction is useful is dysentery. *Pathenium* is also reported as promising remedy against hepatic amoebiasis. A decoction of roots is used to cure amoebic dysentery.

12. Scientific name: *Saussurea heteromalla* (D.Don.) Hand
Local name: Kali ziri
Part used: Seeds
Uses: Fraction of the extract reduced several molecular marks of inflammation. It is used for the treatment of rheumatoid arthritis, cough with cold, stomach-ache, dysmenorrhoeal, and altitude sickness and has been found to have anti-inflammatory, cardio tonic, abortifacient, anticancer and anti fatigue actions.

13. Scientific name: *Ageratum conyzoides* L.
Local name: Not known
Part used: The whole plant or leaves.
Uses: It is used as a purgative and for its febrifugal properties. Its leaves are used to dress wounds and ulcers. It is used traditionally to treat fever, rheumatism, headache and colic. Some other communities use the plant as an antibiotic, anti dysenteric and antilithic agent.

Family: Asclepiadaceae
14. Scientific name: *Calotropis procera* (Aiton) W.T. Aiton
Local name: Ak
Parts used: Whole plant
Uses: Internal part of flower and sugar used for abdominal diseases and asthma. Leaf extract mixed with oil on heat used for joint and waist pain. Leaves are smoked for asthma. Leaf and black pepper used to cure malarial fever.

Family: Berberidaceae
15. Scientific name: *Berberis lyceum* Royle.
Local name: Kasmal
Part used: Fruits, roots, bark
Uses: Barberry's roots are used as remedy for swollen and sore eyes, broken bones, wounds, gonorrhoea, curative piles, unhealthy ulcers, acute conjunctive and in chronic

opthalmia, also used as bitter tonic astringent, diaphoretic and febrifuge. Leaves are used in jaundice. Locally, the plant is used for the treatment of internal injuries. An ointment made from root powder is mixed with oil and applied on broken bones. It is also used for fencing and hedges.

Family: Euphorbiaceae
16. Scientific name: *Euphorbia helioscopia* L.
Local name: Chhatri dodak
Part used: Roots and milky juice
Uses: The plant is used as cathartic. Seeds with roasted peppers are given in cholera. Milky juice is applied to eruption. The roots are known as anthelmintic. Milky latex is known to be poisonous and cause swelling on the skin.

17. Scientific name: *Mallotus philippinensis* Muell.
Local name: Babul
Part used: All parts
Uses: According to Ayurveda, leaves are bitter, cooling and appetizer. Fruit is heating, purgative, anthelmintic, vulnerary and useful in treatment of bronchitis, abdominal diseases, spleen enlargement etc.

18. Scientific name: *Phyllanthus emblica* Linn.
Local name: Alma
Part used: Fruits
Uses: Fruit is astringent, refrigerant, diuretic, laxative, aperients. Fruit is useful in chronic diarrhoea, dysentery, haemorrhage, anaemia, jaundice, dyspepsia. It is used as a heart and brain tonic.

Family: Fabaceae
19. Scientific name: *Dalbbergia sissoo* Roxb.
Local name: Shisham
Part used: Stems, Leaves
Uses: Used in gonorrhoea

Family: Faqaceae
20. Scientific name: *Quercus leucotrichophore* A. Camus.
Local name: Oak
Parts used: Stem, leaves, seeds
Uses: The seeds are astringent and diuretic. They are used in the treatment of gonorrhoea, indigestion, diarrhoea, asthma.

Any galls produced on the tree are strongly astringent and can be used in the treatment of haemorrhages, chronic diarrhoea and dysentery.

Family: Fumariaceae
21. Scientific name: *Fumaria officinalis* L.
Local name: Paptra
Part used: Leaves, stems, flowers
Uses: It is used as weak tonic, slightly diaphoretic and aperients. Also used in liver deceases. It was traditionally thought to be good for the eyes, and to remove skin

blemishes. In modern times herbalists use it to treat skin diseases and conjunctivitis; as well as to cleanse the kidneys.

22. Scientific name: *Fumaria indica* (Hausskn.) Pugsley.
Local name: Papra
Part used: Whole Plant
Uses: The juice of the plant is given in common fever. Also used for removing worms from the abdomen. It is used for the treatment of simple goitre, also used as antipyretic and blood purifier, cooling agent, and anti periodic, and used for eruption. The plant is used in diabetes and bladder infection by taking its extraction early morning.

Family: Labiate
23. Scientific name: *Micromeria biflora* – (Buch.-Ham. Ex D.Don.) Benth.
Local name: Lemon Scented Thyme
Part used: Flower and leaves
Uses: A paste of the root is pressed between the jaws to treat toothache. The plant is rubbed and the aroma inhaled to treat nose bleeds.

Family: Lamiaaceae
24. Scientific name: *Mentha longifolia* L.
Local name: Podina
Part used: Leaves
Uses: Stimulant, cooling medicine, headaches common use is an antipruritic, especially in insect bite treatments (often along with camphor). Menthol is also used in cigarettes as an additive, because it blocks out the bitter taste of tobacco and soothes the throat. Many people also believe the strong, sharp flavour and scent of Mint can be used as a mild decongestant for illnesses such as the common cold.

25. Scientific name: *Mentha royleana* L.
Local name: Jangli podina
Part used: Whole plant
Uses: The dried leaves are made into powder and used with curd in the summer as stomachic agent, also used a carminative in diarrhoea and dysentery.

Family: Leguminosaceae
26. Scientific name: *Bauhinia variegate* L.
Local name: Kachnar
Part used: Dried buds, root, bark
Uses: The bark is alterative, astringent and tonic. It is useful in the treatment of skin diseases, scrofula and ulcers. The dried buds are used in the treatment of piles, dysentery, diarrhoea and worms. The root is used as an antidote to snake poison. A decoction of the root is used to treat dyspepsia.

27. Scientific name: *Butea monosperma* (Lam.) Taub.
Local name: Chichra
Part used: Leaves, Root and Seeds
Uses: Gum is useful in chronic diarrhoea, back-aches and piles; is tonic for liver useful in chest and lung diseases, syphilis.

28. Scientific name: *Cassia fistula* L.
Local name: Amaltas
Part used: Root bark, seeds and leaves
Uses: Root bark, seeds and leaves are purgative. Fruit is cathartic, antipyretic, dernulcent. Flowers are cooling, astringent. Leaves in the form of paste are used externally in skin diseases. Bark and leaves, mixed are useful in pustules, ringworm, insect bite, facial paralysis and rheumatism. Powdered seeds are used for including emesis. Root is useful in fever, biliousness, leprosy, syphilis.

Family: Graminaceae
29. Scientific name: *Saccharum officinarum* L.
Local name: Eekh
Part used: Whole Plant
Uses: It is laxative, diuretic and tonic. It strengthens the teeth. Clear the foul odour of mouth. It is good in jaundice.

Family: Mimosaceae
30. Scientific name: *Acacia modesta* Wall.
Local name: Phulai
Part used: Stems
Uses: Medicinally it is used for gas trouble and its young twigs are used for cleaning teeth, dental disorders and dental problems. Its miswak is approximately 20cm long with 2cm in diameter. It is slightly curved and tough with pleasant taste.

31. Scientific name: *Acacia arabica* (Lam.) Willd.
Local name: Babul
Part used: Leaves, fruit gums
Uses: The leaves are astringent and beneficial to the eye. Fruit of the plant is Coagulant. Gum is astringent, cooling and healing. It stops bleeding. It cures dysentery and diarrhoea. Extract of the bark mixed with honey is applied in the eyes to relieve conjunctivitis and to stop lacriminiation. Bark is goof for gums, heals and ulcers. It is sedative.

32. Scientific name: *Accia nilotica* L.
Local name: Kikar
Part used: Whole tree
Uses: The bark is used for cough. It acts as an astringent and it is used to treat diarrhoea, dysentery and leprosy. Bark and root decoction, said to impart courage, even aphrodisiac, and the root is said to cure impotence. Bark or gum is used to treat cancers and/or tumours (of ear, eye, or testicles) and indurations of liver and spleen, condylomas, and excess flesh. Sap or bark, leaves, and young pods are strongly astringent due to tannin, and are chewed as an antiscorbutic.

33. Scientific name: *Acacia catechu* Wild.
Local name: Khair
Part used: The bark, wood, extracts fruits, Gum and flowering tops.

Uses: It is bitter and astringent in taste, pungent in the post digestive effect and has cold potency. It has a special potency to alleviate the skin diseases. It possesses light and dry attributes. It is used in the diseases like worms, wounds, fever, oedema, prurities, diabetes, obesity, blood disorders, cough, asthma and anaemia etc. Plant is useful, internally as well as externally.

Family: Malvaceae
34. Scientific name: *Malva neglecta* Wallr.
Local name: Saunchal
Part used: Whole plant
Uses: The plants are known as cooling, emollient, and demulcent. The leaves are recommended in piles and scurvy. The Seeds are use in bronchitis, cough inflammation, ulceration of bladder and in haemorrhoids; externally applied on skin diseases.

35. Scientific name: *Sida cordata* Burm.f.
Local name: Bariar
Part used: Whole Plant
Uses: The juice of the whole plant is used in rheumatism, gonorrhoea and spermatorrhoea. Locally it is applied in elephantiasis. The leaves are known as demulcent and are used in opthalmia. The roots are used as astringent, stomachic, durative, febrifuge and demulcent. Seeds are considered as aphrodisiac, laxative and demulcent, recommended in gonorrhoea crysittiscolic tenseness and piles.

36. Scientific name: *Malvastrum cormandelianum* L.
Local name: Yard Sonchal
Part used: Whole plant
Uses: Generally healing, pulmonary troubles, diarrhoea, dysentery, cutaneous, subcutaneous parasitic infection, febrifuges, fodder, fibre, household, domestic and personal items.

Family: Moraceae
37. Scientific name: *Ficus bengalensis* L.
Local name: Bhor
Part used: Leaves, Seeds, Stems
Uses: Various parts of the plants are considered medicinal. The milky juice is externally applied for pains and bruises and as anodyne in rheumatism and lumbago. It is also used as remedy for toothache. The leaves are heated and applied as abscesses. The bark is tonic and astringent and cooling. The seeds are considered as tonic and cooling.

38. Scientific name: *Braussonetia papyrifera* (L.) L'He'r. *ex* Vent.
Local name: Paper mulberry
Part used: Wood
Uses: A notorious allergen.

Family: Pinaceae
39. Scientific name: *Pinus roxburghii* Sargent
Local name: Chir pine
Part used: Seeds and Gums

Uses: It also has medical properties and can be used as stimulant, antispasmodic, astringent, diuretic and anti-pathogenic.

Family: Poaceae
40. Scientific name: *Cynodon dactylon* L.
Local Name: Tall, Khabhal
Part used: Whole plant
Uses: An infusion of the grass with milk is used for bleeding piles, irritation of urinary organs, dropsy and vomiting. The juice is also given in dysentery with fever.

Discussion

In hilly areas cultures, the local plants are documented as fodder for domestic and wild animals, nutritional and vitamins supplement for people, constituents of many indigenous medicines (Goodman & Ghafoor, 1992). Ethnic groups accede to the huge mountain regions of the world with unique cultural traditions in the use of the biological resources of their environment. This indigenous knowledge and its material base are now under high pressure and in danger of disappearing for ever (Martin, 1995). The ethno-botanical study of direct interface between human and plant population, through its culture, population classifies plants, develops attitudes and beliefs and teaches the use of plants, while human deeds has a direct impact on the plant communities with which they interact, the plant themselves also impose restrictions on humans, these mixture interactions are the focus of ethno botany (Pei, 1995). Ethno botanical awareness will reinforce customary culture, including the endorsement of local remedies, measuring the sustainability of local remedies and designing ways of ensuring that knowledge is passed from generation to generation (Martin, 1995). The rapid annihilation of rare plant species, most of which is related to the recent renaissance of interest in finding new anti-viral, anti-neoplastic and other agents. There is more than enough reason to justify research on fast disappearing medicinal plants, especially those plants people used, how they use them, and under what circumstances the plant provides efficacies.

The method of reaping was scored as per enormity of destruction. A range of part of plants are used *eg*., roots, shoots, whole plants, mostly whole plants are used for management of various disease, There are 46 plants species found in MHNP which are most commonly used for ailments of different diseases, Out of 24 plants species, 22 plants were used as a whole, 15 plants roots parts were used to cure different diseases and 9 plants species shoot was used. A total of 46 species of medicinal plants belonging to 21 families were recorded. Medicinal plants may help to amplify the role that these play in healthcare to treat dermatological problems; Gastrointestinal disorders, Urogenital disorders, Blood purifiers, General health of local people which rely on these medicinal plants. Most of the plants found in MHNP have medicinal value, for this purpose various parts of plants are used in this regard in order to treat various diseases. Bussmann & Sharon (2006) looked at the long-established use of medicinal plants in North Peru. A number of 510 plant species belonging to 250 genera, 1126 families used for medicinal purposes were collected, identified and their vernacular name, long-established uses and applications were also recorded. An ethno botanical survey was carried out among the Taounate population in Nothern Morocco to recognize plants used in folk-medicine. The popular uses of the plant, the part of the plant used, the preparation and mode of administration are presented (Yineger *et al.,* 2007). The present study was conducted to evaluate the medicinally important plants from Margalla Hills National Park with general information and their folk medicinal uses.

References

Ahmad, S.S. 2007. Medicinal wild plant knowledge from Lahore-Islamabad motorway, (M-2). *Pakistan Journal of Botany*, 39(2): 355-377.

Ahmad, S.S., S. Fazal. E.E. Valeem and Z.I. Khan. 2009. Evaluation of ecological aspects of roadside vegetation around Havalian city using multivariate techniques. *Pakistan Journal of Botany*, 41(1): 53-61.

Ahmad, S.S and S.Z.Husain.2008. Ethno medicinal survey of plants from salt range (Kallar Kahar) of Pakistan. *Pakistan Journal of Botany*, 40(3): 1005-1011.

Bussmann, R.W. and D. Sharon. 2006. Traditional plant use in Northern Peru: Tracking two thousand years of health culture. *Journal of Ethnobiology and Ethnomedicine*, 2: 47.

Ghimire, S.K., D. McKey and Y. Aumeeruddy-Thomas. 2005. Heterogeneity in ethno ecological knowledge and management of medicinal plants in the Himalayas of Nepal: Implication for conservation, *Ecology and Society*, 9(3): 6.

Goodman, S.M. and A. Ghafoor. 1992. The ethnobotany of southern Balochistan, Pakistan, with particular reference to medicinal plants. *Fieldiana*: Botany, New Serious, 31, 1.V-I1.84.

Hocking, G.M. 1958. Pakistan Medicinal plants I, *Qualitas Plantarum Et Material vegetable*, 5: 145-153.

Hussain, M. 1987. *Medicinal plants of Mansehra*. M.Sc. thesis. Botany Department University of Peshawar, pp. 174.

Islam, Ahmad, Rashid, Razzaq, Akhtar and Khan. 2006. Weeds and medicinal plants of Shawar valley, district swat. *Pak. J. Weed Sci. Res*., 12(1-2): 83-88.

Martin, J.G. (ed.). 1995. *Ethno botany*, Champan and Hall, New York.

Nasir, E., and S.I .Ali. 1972. *Flora of West Pakistan*. An annotated catalogue of vascular Plants of West Pakistan and Kashmir.

Pei, S.J. 1999. *Ethnobotany and sustainable use of plant resource in HKH mountain region*. Planning workshop on ethno botany and its application to conservation and community development in Hindukush Himalayan region, Nepal, Punjab, Pakistan. Biological Conservation. 63(3): 205-210.

Qureshi, R.A. and M.A. Ghufran. 2007. Indigenous knowledge of selected medicinal wild plants of District, Attock, Punjab, Pakistan, 39(7): 2291-2299.

Shinwari, M.I. and M.A. Khan. 1998. *Ethno botany of the Margalla Hills,* Islamabad, Pakistan: Department of Biological Sciences, Quaid-i-Azam University.

Yineger, H., E. Kelbessa, T. Bekele and Lulekal. 2007. Ethno veterinary medicinal plants at Bale Mountains National Park, Ethiopia.

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