

Exploring the Medicinal Plants Wealth: A Traditional Medico-Botanical Knowledge of Local Communities in Changa Manga Forest, Pakistan

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Abstract: Medicinal usage of plants is one of the superior characteristic on which mankind is dependent upon since ages. Plants are being used for the treatment of various diseases of humans and animals. The Changa Manga Forest is designated as National Park located in Kasur, District. It consists of vast biological panorama, constituting many plants of the medicinal values. The purpose of this study was to preserve native traditional knowledge of plant's usage, promotion of awareness and its significance to the domestic and international entrepreneur, identifying the flora, density and conservation of species. Ethno-medicinal survey was conducted in the periphery of the Changa Manga. The survey identified many plants at study site. Some of them including their medicinal values are *Ageratum conyzoid*, *Anaglis arvensis*, *Coronopus didymus*, *Cannabis sativa*, *Fumairia officianalis*, *Oxalis corniculata*, *Sonchus oleraceus*, *Rumex crispus*, *Euphorbia heliscopia*, *Prosopis cineraria*, *Mentha spicata* etc. They are used by the indigenous people for the treatment of ulcers, dysentery, eye problems, burns, malaria, insomnia, hepatitis, cough, cholera, insect stings, gastric problems respectively. Plants like *Capparis deciduas*, *Cleome Viscosa*, *Suaeda Fruticosa*, *Malvastrum coromendelianum* are present in few numbers but surpassing medicinal values, highlighting the need of conservation. Responsiveness of the botanist is required to focus on the sustainable use, conservation and management strategies are required for valuable medicinal species so that sustainable production, with the balanced ecosystem and development may lead the country to sustainable income and other welfare.

Key words: Medicinal plants • Ethno-Botanical Survey • Changa Manga Forest

INTRODUCTION

Medicinal use of plants is being found in earliest history. Studies of wild animal's show that plants are being used intuitively by them to treat their illness. Therapeutic value of Medicinal herbs has become the possible source for the selection of such plants for biodynamic compounds. Medicinal plants are of economic importance they act as antibacterial, antioxidant, anticarcinogenic, antifungal, analgesic and insecticidal [1]. Study was conducted to find out the importance of plants in the various parts of Malam Jaaba valley, Swat in 2007. Presence of different variety of plants, favorable weather and less accession of human to the plants in that area was noticed. Preparation of ethnobotanical inventory of various plant resources of that area and evaluation of the conservation status of important medicinal plant was

primary aim of this study. 90 species of plants of ethno-medicinal importance were documented, out of 90 spp, 71 spp were used for medicinal purposes, while remaining were used for other important practices like fodder, wild fruit, fuel wood etc [2].

The Changa Manga Forest designated as National Park, consists of vast biological panorama, constituting many plants of the medicinal values. Ethnobotanical studies have given the worth to the advancement in the field of health and other conservation strategies in the world [3]. Harshberger [4] used the term ethnobotany for the study to explain the usage of plants by the earliest aboriginal people. Allem [5] defined ethnobotany as the inter-relationship between biology, economy, culture and plants, people and environment. Jones [6] described it as a study of interrelationships between earliest man and plant. One of the objectives of ethno botanical study is to

record the native knowledge about plants because people use traditional medicines made up of plants for different healing purposes. This can be referred as ethno medicine. Ethno medicine is the sub field of ethno botany and it cites the study of customary therapeutic practices which analyzes different ailments concerning health and it also addresses the healthcare and healing processes [7]. Herbal medicine is very well acknowledged and practiced In Asia and due to this most international reputed medicinal plants came particularly from China and India. Use of herbal medicine is also increasing in Europe and America for the treatment of the problems caused by modern artificial diets and hectic lifestyle. The Chinese plant *Artemisia annua* has become the essential ingredient for the anti malarial drug in recent years, [8] Pharmaceutical manufacturers are now paying for the plants which are being grown in east Africa for the supply. *Sutherlandia*, a local plant of South Africa, is being used for HIV/AIDS sufferers as it providing many benefits to them [9] Devil's Claw and African Geranium, are the plants of Africa has gained fame as herbal medicines, in Europe particularly [10]. The motorway proceeding through different regions of Pakistan has never been surveyed ethno medicinally before. So collections of the information about the traditional use of plants in such areas were considered valuable before it was vanished. The bunch of ethno botanical information intends to provide the remedy to be used for the resolution of several limitations and conservation of medicinal herbs in that area [11].

Ethno-Veterinary Medicine is an interdisciplinary study of expertise, customary knowledge, techniques, traditions and ethnic beliefs of the community about the healthful conservation, livestock production and health care [12]. It confines the details of illness and how they can be controlled; cures and therapeutic procedures for treatment and safeguard; nourishment, management and reproduction planning; spirituality; and the assets that consists of the knowledge and skills. [13]. The people of Cholistan dessert are the aborigines that keep migrant livestock and use plants and herbs as curative medium for themselves and for the benefit of their livestock which are easily obtained from the pasture. Cholistan desert offers a great scope to the ethno medicinal studies as it is rich in native herbal resources [14]. Ethno medicinal survey was conducted for the compilation of data concerning the various customary uses, including the medicinal plant uses in Nandiar Khuwarr catchment. 156 local taxa were found to be used for medicinal purposes. 12 of which are reported to be scarce [15]. The plants were primarily taken in the form of decoction prepared by boiling freshly

collected plant in water for the different treatments. The anthropogenic activities like deforestation, urbanization, introduction of the exotic species, over grazing pose serious threats. Similar study was conducted in salt range Pind Dadan Khan for the conservation of the indigenous traditional knowledge for the benefit of the community and environment [16].

It is well predictable that the difficulties arising from conservation and development are connected and so efforts should be made to tackle these problems [17]. According to current conservation strategies like the Convention on Biological Diversity (CBD) and the Global Strategy for Plant Conservation (GSPC) focuses on the need of human's efforts for the conservation of flora [18, 19]. Botanic gardens Conservation International (BGCI) are the world's largest system for plant conservation which constitute over 1800 botanic gardens [20]. Botanic gardens play an important role for plant conservation and links diversity with the betterment in the people's life [21]. Intentionally and unintentionally by observing different rituals, taboos and beliefs Indigenous communities of Pakistan are conserving medicinal plants. Natural resources are being efficiently utilized by numerous traditional harvesting methods. Efforts are being made to provide food, nutrition and health care to the local people along with the recovery of the traditional knowledge and conservation of those important plants [22]. That traditional knowledge is being used by different herbal, homeopathic manufacturing companies. Which are numerous in numbers and this makes Pakistan among the leading countries which are exporting medicinal plants [23]. Many closely related species are usually sold under one name, this intentional or unintentional practice may result in the overexploitation of the particular species. So to reduce this proper identification is required consulting the trained taxonomist [24, 25, 26].

The purpose of this study was to preserve native traditional knowledge of plant's usage, promotion of awareness and its significance to the domestic and international entrepreneur, identifying the flora, density and conservation of species. Ethno-medicinal survey was conducted in the periphery of the Changa Manga.

MATERIAL AND METHODS

Study Area: The Changa Manga lies in Latitude of 31.0833° North and longitude of, 73.9667° East extending to the area is 50 km² (12,510 acres). it is Wildlife Park, now maintained as national park and one of the biggest planted artificial resource managed forest in Lahore

District, Punjab, Pakistan [27]. It is located near Chunian which is about 70 km south of Lahore. The forest entrance is from a road of Highway which is N-5 near Bhai Pheru. In the beginning it was planted on the uncultivated land densely populated with trees and bushes in 1864 for the provision of fuel wood for the steam engine operative from Peshawar to Karachi [28] since then proper systematic planting of the trees is going for many years. The most important trees that are being planted there are *Dilbergia Sisso* (Shisham), *Torus Alba* (Tooth), *Bombax Malabaricum* (Simbal), *Acacia Nilotica* (Kikar), *Populus Tremula* (Popular) [29]. The trees are irrigated from 17 channels of the main Upper Bari Doab Canal and Vahn distributary which starts from April till October. Changa Manga is present in the sub-tropical continental plains including the plain of West Pakistan [30]. The surrounding of Changa Manga forest has extreme climate, with high temperature in the summer and low rainfall. But due to dense population of the trees the temperature in Change Manga forest is comparatively low to its surrounding and has high humidity which results in providing the favorable environment for the plants to prosper creating an ecological island; consisting of such herbaceous plants which are economically as well as medically very important for the mankind.

Field trips have been made to collect the herbaceous plants present in the selected area. The collection of the plant's sample was based on random sampling. They plants specimen were preserved for the identification. Questionnaires and interviews had been conducted to ascertain the traditional medicinal uses of the plants by the local people. The collected information was crosschecked with literature review of the ethno medicinal survey and medicinal uses of the plants.

RESULTS

The collected data has been arranged alphabetically according to the family. The scientific names and medicinal uses have been specified.

Amaranthaceae

•*Achyranthes aspera* L.

Local name: Poth Kant, ludhri: Leaves and roots in the form of decoction are used for tooth ache. It reduces abdominal pain. The juice of herb is used for rheumatism, dysentery, skin diseases. Insects bite is cured by applying root's paste. The mixture of root is used for intestinal problems, skin diseases and night blindness. Cough and asthma can be cured by using the ash of the plant with honey.

•*Avera javanica* (Burm.f.) Juss. ex Schult.

Local name: Unknown : It is used for treatment of the skin dryness and self cracking of the skin thus acting as an emollient. The seed and infructescence is used for treating diarrhea. It is diuretic and cures urethral discharges, calculi formation and acts as helminthic.

Asclepiadaceae

•*Calatropis procera* (Aiton).

Local name: Akk: The plant is very bitter, acts as a cathartic, cures ulcer, leprosy, vitiligo, tumors, piles, disease of the spleen, the liver and the abdomen, relieves strangury, helminthic. Its ash used act as an expectorant. Its leaves when hot leaves are applied to abdomen to relief the pain. And paste of leaf and flower is mixed with honey to cure flatulence, worm infestation in intestine. The root powder along with butter is applied in the form of ointment on the bite of rabid dog. And this is also applied on the paralyzed limbs.

Asteraceae

•*Ageratum conyzoides* L.

Local name: Not known: It is used as a laxative and has antipyretic properties. Its leaves acts as an astringent. Its powder is used for the treatment of ulcers and wounds, sores and cuts caused by the leprosy. It is used traditionally to cure, headache, rheumatism and cramps. It is also used as antibiotic, cures stone formation in urinary tract, stings bite, ringworm. A tea is prepared using flower heads for the treatment of cold and coughs.

•*Ayapana triplinervis* (M.Vahl) R.King & H.Robinson.

Local name: Not known: It cures the stomach related problems. Reduces cough, can be used as anti septic, styptic, demulcent, antihepatotoxic, cures ulcers. The mixtures, decoction of leaves are used to protect the liver. It can also be used as a digestive tonic and also cures the cold, flu and headaches. It act as antipyretic. It also treats ear and eye problems.

•*Cirsium arvense* L.

Local name: kandhari: The young flowers are grinded with water for the induction of vomiting.

•*Conyza bonariensis* L.

Local name: Loosan booti, namkeen booti: The herb is used as diuretic and styptic. It is used in the cure of several diseases like diarrhoea, dysentery and haemorrhage

•*Conyza Canadensis* L.

Local name: Not known: Its steam is taken by boiling it with water; this opens the blockage of nose during cold. Its smoke is used to repel the insects. It also treats the diarrhea and dysentery. It has diuretic, antirheumatic, astringent, anthelmintic properties. It is used for the treatment of tonsils and inflammation of throat.

•*Desmostachya bipinnata* (L.) Stapf

Local name: Drabh: Roots are applied on the carbuncle in the form of poultice. They are also grinded along with water and little amount of milk is added and given during painful urination and plies. Roots are also used for the treatment of cholera. For this they are grinded with few black pepper along with water and they are taken orally.

•*Galinsoga ciliata* (Rafin.) Blake.

Local name: Not known: It is used for the wound's treatment. It heals up the wound faster. The sap helps in coagulation of blood. And act as antibiotic.

•*Parthenium hysterophorus* L.

Local name: gajar booti: It is applied directly and externally for the curing of skin diseases. The decoction of plant is taken for the cure of internal problems like antipyretic etc. it also prevents from the amoeba infestation in the liver.

•*Sonchus arvensis* L.

Local name: Dodh Bhat: It is taken as tonic and treats phthisis

•*Sonchus oleraceus* L.

Local name: Not known: An infusion is made to treat diarrhea. The latex present in the sap is usually applied on the warts. The stem juice is used as laxative; but care should be taken as it causes cramps and tenesmus. Poultice is made from leaves and applied on the swellings causing inflammations. An infusion of the leaves and roots is antipyretic and tonic.

•*Taraxacum officinale* F.H. Wigg.

Local name: Kanfhu: It is used in the treatment of bacterial infection, hepatitis. It is useful in hydrops and used as a remedy for chronic liver's obstruction and bowels, result in curing of the dyspepsis and constipation. It enhances urination in calculus. It is very popular in case of hepatic congestion.

Brassicaceae

•*Coronopus didymus* L.

Local name: Thandi Booti: This plant has cooling properties; it induces feeling of coolness in the body. It is used as fumigant to repel the insects.

•*Sisymbrium irio* L.

Local name: saag booti: The seeds are used as expectorant. The ground seed powder is taken for the cure of hepatic problems, including Jaundice, cirrhosis, Hepatitis-C.

Cannabaceae

•*Cannabis sativa* L.

Local name: Bhang: The plant consists of soporific properties. It is used for malaria, blood poisoning, sting bite, dysentery and anthrax, dried and its leaves are crushed and drink is prepared which is taken as sedative. It is also as coolant. The leave's juice is used to remove dandruff from hand, burns. It is also used to remove pests.

Capparidaceae

•*Capparis decidua* L.

Local name: not known: It is used for diabetes, asthma, skin infection, tooth ache, ear pain. Bark in the form of powder is used for indigestion and rheumatism. Shoot and fruit is crushed and mixed with mustard oil and applied on the boils and swellings.

•*Cleome viscosa* L.

Local name: chaskoo: Drops of leaf's juice are used for ear, pain, infection and deafness. Piles and dysentery are cured by using its leaves as potherb. Leaves dipped in sesamum oil and warmed up with fire and applied on the area of pain, boils and inflammation. Ringworm can be cured by applied seeds paste.

Caryophyllaceae

•*Stellaria media* L.

Local name: not known: It treats the pinkeye, constipation, bites of insects. Acts as a laxative. Skin disorders can be treated by making its poultice. It gives soothing effect to the skin rashes, burns and irritations. It is also used for the cure of respiratory disorders including asthma, bronchitis and congestions.

Chenopodiaceae

•*Chenopodium album* L.

Local name: Bathu: This plant meliorates the hunger so usually used as tonic, useful in irritability of stomach, pain, eye problems, throat infections, blood diseases, spleen and heart.. It is anthelmintic, diuretic and aphrodisiac, cathartic. It is also in the form of an infusion for the enema used for intestinal Ulceration. the infusion is also used for the treatment of rheumatism. The juice of this plant is applied for the prevention of sunburn and freckles. Its decoction is used for the teeth cavities.

•*Suaeda fruticosa* (L.)Forsskal.

Local name: boi booti: It acts as an antibacterial. Poultice is made using leaves for the treatment of conjunctivitis. It is used as vomitive when it is brewed with water.

Convolvulaceae

•*Convolvulus arvensis* L.

Local name: Lali: The dried powder of plant is mixed with molasses (gurr) and taken with milk to cure constipation. The leaves in the form of paste are applied on the boils.

Euphorbiaceae

•*Euphorbia helioscopia* L.

Local name: Chhatri dodak, Gandi booti: The plant has laxative properties. Seeds are roasted with peppers and used for the treatment of cholera. The roots act as a vermifuge

Fumariaceae

•*Fumaria officinalis* L.

Local name: not known: It purifies the blood, act as a febrifuge. It can be taken as tonic. Slightly sudorific and laxative, Cures liver diseases along with stomach upset, gallbladder, infection of bacteria, constipation. It is traditionally used for the eyes and for the removal of spots on skins. Uses for pain relief. It cures skin diseases like eczema, acne.

Lamiaceae

•*Mentha spicata* L.

Local name: jangli podina: Tooth powder is made by drying leaves, which is usually used for tooth ache. It also has carminative properties. Cures diarrhea, Nausea, vomiting, sickness and stomach diseases.

Malvaceae

•*Abutilon theophrasti* L.

Local name: Not known: People have been using it for the cure of eye diseases. The tea made from this plant is very helpful in curing dysentery and fevers. The seed is crushed and its powder is taken for stomach ache. The bark has diuretic and styptic properties. The decoction of root is used for transient fever.

•*Malvastrum coromendelianum* (L.) Garcke.

Local name: patakha: It is a poisonous plant but has many medicinal values. It acts as anti bacterial, anti fungal. Plant is used for Inflamed sores, Wounds, Cooling. Its decoction is used for relieving cough, curing Dysentery and as an Emollient. Flowers are used as sudorific.

Mimosaceae

•*Prosopis cineraria* (L.) Druce.

Local name: pirasoo: Plant consists of helminthic, antifungal, antibacterial, anticancer, pharmacological, antiviral properties. It has been used for the treatment of has been used for dysentery, asthma, bronchitis, muscular tremors, leprosy. Its stem bark has pain relieving and febrifugic properties. Bark has been used for the treatment of rheumatism. The Leaf in the form of paste is applied on boils, mouth ulcers and blisters open sores on the skin. Leaf's Smoke is usually used for the cure of eye troubles.

Myrsinaceae.

•*Anagallis arvensis* L.

Local name: not known: It act as a skin moisturizer and helps in the treatment of warts. Reduces headache, gouty or rheumatic pains,

Oxalidaceae

•*Oxalis corniculata* L.

Local name: Khati Booti: It is used in insomnia. Plant's juice is usually used for skin diseases. Leaves are used for snake bite, as refrigerant and coolant for stomach disorders, headache and fever. Plant crushed along with cumin seeds used with water for the cure of dysentery. It is also used for teeth sensitivity. Decoction of this plant is made for the cure removal of worms. This may also be used as tonic which boosts up the immune system. It is used for the treatment of many respiratory disorders like bronchitis, asthma. It is suggested to use in gastric, kidney problems, urine inflammation. It is also used as carminative.

Poaceae

•*Cynodon dactylon* (L.) Pers.

Local name: humrik booti: Fresh leaves paste is used for cuts, bleeding wounds and piles. Few drops of plant juice are inspired to stop nose bleeding. Its Juice is also is used to cure fever and diarrhea.

Polygonaceae

•*Rumex Crispus* L.

Local name: palak booti: Used in various skin diseases, cures rheumatism, cough, Used as laxative can be taken as tonic.

Ranunculaceae

•*Ranunculus muricatus* L.

Local name: not known: It is poisonous a bit. Its decoction is made for asthma treatment, constant fever.

Rhamnaceae

•*Ziziphus nummularia* (Burm. f.)

Local name: not known: Powder of dried root is used to cure vomiting and other diseases related to abdomen. Its bark is used to cure the cold and flu and teeth diseases. It also cures skin diseases like scabies, boils. It purifies the blood, cures diabetes, dysentery. And act as a vermifuge.

Solanaceae

•*Datura stramonium* L.

Local name: dathura: It has anti- incendiary, spasmolytic, anesthetic, antibiotic, helminthic, emollient, soporific properties. It can also be used for the cure of cough, bronchitis and asthma. It act as analgesic in rheumatism, muscle spasm, sciatica , toothaches, earaches and headaches etc. it treats enuresis, malarial fever, reduce hair loss and dandruff. Poultice is made from leaves and applied to treat boils.

Verbenaceae

•*Lippia nodiflora* L.

Local name: not known: It is used for the treatment of hepatitis. Plant is placed in water overnight and then that water is taken in the morning in fasting and this practice is continued for 40 days. Its leaves are used for the treatment of snake and scorpion sting. Indigestion in children can be cured by making the mixture of leaves and soft stem. It also cures knee joints. It is used as tonic, expectorant, styptic. Dandruff can be treated by applying paste of leaves on the scalp.

DISCUSSION

The use of plants is usually very common in the rural area as compare to the urban area. The ethno medicinal survey elucidates that 37 species of plants has significant medicinal value belonging to 22 families. The local people are usually ignorant to the high medicinal values of some plants. The traditional uses are usually passed on from the forefathers. Only 11 plants were the main plants commonly known to the people and have constant usage by the people. Some of the species were very rare in that specific area although they had exceptional medicinal value. The identified plants cured many diseases which are usually very common including throat infections, intestinal infections, skin diseases, liver disorders, eye problems, stomach problems, fever, different types of body pains etc. The surveyed area is rich in the herbaceous plants having marvelous medicinal importance. But less importance is given to them. Grazing, cutting and fire activity was very frequent in that area which results in the loss of many economical importance herbs. There are many plants which are poisonous in nature but if they are used in control manner they will not have any harmful effect. The recipes and use of the plants has been passed on from parents to children so people are now experienced and they know that how to use certain herbs. The study determines that these plants can be used in creating new drugs which can create a storm of development in the pharmaceutical industry. But along with this it is paramount importance to conserve the precious medicinal plants [31] as fascination for the usage of the plant is increasing globally [32] conservation doesn't only involve the protection and preventing the access to the plant but it also involves gathering of baseline data of economic, social and ecological constraints which should be assembled in a effective management strategy. it also requires awareness about the importance of the plants along with the cultivation under organized manner along with the involvement of the local community which will reduce the stress on the plant and hence will prevent it from washing away from the environment [33].

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