

## Full Length Research Paper

# Traditional uses of medicinal plants in Darra Adam Khel NWFP Pakistan

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Accepted 26 July, 2010

The present study documents the traditional knowledge of medicinal plant species used in Darra Adam Khel NWFP Pakistan. We have documented the use of 34 species belonging to 25 families. The dominant families are Lamiaceae with 3 species, followed by Monaceae with 3 species, Mimosaceae, Apocynaceae, Asteraceae and Liliaceae with 2 species each. These medicinal plants are used to cure about 30 - 35 types of ailment. The main ailments in this area were cough, diabetes, stomach problem, headache, jaundice, toothache and skin diseases. Leaves are the most frequently used plant part against diseases. It is noticed during investigation that *Rumex hastatus* and *Monothecha buxifolia* are the endangered species in the area and special care is needed. The studies carried out for the first time in this area, gathered information are documented about traditional remedies before they are lost.

**Key words:** Darra Adam Khel NWFP Pakistan, ethnobotany, medicinal plants.

## INTRODUCTION

Plants always have great importance in many cultures. Human beings are user of plants for their basic requirements like feeding, clothing, sheltering, hunting and nursing. As source of medicines, plants have formed the basis for sophisticated traditional systems and continue providing mankind with new remedies. In recent years, the interest in folk medicine has highly increased. This discipline is gaining the scientific basis for its appropriate application within official medicine. The knowledge of herbal remedies, developed through trial and error over the centuries, is being used as guide to lead the chemists towards different classes of compounds. It is a fact that the 25% of all medical prescriptions are based on substances derived from plants or plant-derived synthetic analogues (Sara et al., 2009).

Indigenous medicine is now recognized world wide as a healthcare resource. The World Health Organization (WHO) has pointed out that traditional medicine is an important contributor toward health goals. Today,

according to the WHO, as many as 80% of the world's people depend on traditional medicine for its primary health care needs. There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases. During the 20th century, the only professional practitioners of traditional medicine remaining were the local Arabs and the Bedouins. Paradoxically, this is at a time when there is an ever-greater interest in alternative and natural medicine, and the usage of naturally alternative medicine is flourishing within the modern Israeli society. The picture today within the region is a general availability of the modern medicine, a widespread non-professional use of the folk and natural remedies and a small and decreasing professional tradition of Arab medicine sector practiced by Arabs, druzes and Bedouins. This could have significant practical and economic consequences. The 74% of all plant-derived drugs in clinical use worldwide have been discovered through follow-up investigation of the ethnomedicinal uses of plants. Therefore, it is essential for drug discovery to preserve and record and record traditional know-how on medicinal plants and in most cases, this depends on local practitioners and field surveys (Azaizeh, 2003).

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## Study area

Darra Adam Khel FR Kohat is also known as the gun city. During British days the area was declared as tribal area under the control of district administration of Kohat. After independence the area enjoys the same status and district coordination officer running the administration. It is Federally Administered Tribal Area of Pakistan. Darra Adam Khel is famous for the production of arms and ammunition throughout the country. The technical skill attained by these gunsmiths is knowledge even in foreign countries. It has also become a major source of livelihood for the people of this area.

Darra Adam Khel is situated between two well known city of NWFP Pakistan, Peshawar and Kohat. It is at a distance of 40 km (25 miles) from Peshawar and 24 km (15 miles) from Kohat. It is linked on the East by Kohat district through longest tunnel (1885 m) of Pakistan. In the West bounded by Khyber Agency and Tirah hills, while towards North by Peshawar and Nowshehra district and in south lies Orakzia agency. The area is hilly and the population is mainly concentrated between two parallel mountainous ranges. People inhabiting the area belong to Afridi tribe. Darra Adam Khel is divided in five sub section Akhurwal, Zarghun Khel, Sheraki, Torchappar and Bosti Khel. Total area of Darra Adam Khel is 446 Km<sup>2</sup>. Population according to census report of 1998 is 88456.

The geological information has been little investigated. Coal mines are found in mountains of Darra Adam Khel. The climate of the area is subtropical type and some of the rain fall is received during winter and spring month. June, July are the hottest months of the year with the mean maximum temperature rising to 42°C while December and January are the coldest month coming down with the mean minimum temperature to 4°C. The area has variety of land forms, average height of hills is 1500 meter and the highest point of the area is located near the western border having height of 1918 meter. Two naturally occurring forests are found at the top of mountain. One is Bolander forest and another one is Torchapper forest. Shortage of water for agriculture purpose has a great problem. Rainfall is insufficient to the crops and other cultivated plants. In some places well and tube well are used for irrigation purposes. Due to unavailability of water for agriculture purposes and no running streams in the hills, the area is consisting of xerophytes type of vegetation. The plants of the area are generally thorny; leaves are hairy and leathery to avoid excessive transpiration. *Acacia modesta*, *Monothea buxifolia*, *Zizyphus numularia*, *Olea cuspidate*, *Peganum harmala*, *Withania coagulans*, *Calotropis procera* and *Beauhinia variegata* are common trees of the area (Zahid, 2007; Mirza et al., 1992).

## MATERIALS AND METHODS

The equipment used during the research work were notebook, map

of the area, pencil, plant presser, newspaper, blotting papers, polythene bags, cutter, compass, altimeter camera and Global Positioning System (GPS). Study was carried out at several time intervals during the period 2007 - 2009. We visited Darra Adam Khel in different seasons of the year performing the work in various phases. Information on demographic (age, gender) and ethnobotanical information was gathered from each site by using a semi-structured questionnaire containing questions like (1) what is your name? (2) How old are you? (3) Do you know any medicinal plants in this area? (4) How do you use them? (5) Which parts of these plants are used for medicinal purposes? (6) What is the local name of these medicinal plants? Information about the local uses of the species as medicinal, fuel wood, timber and fodder etc were obtained through random sampling by interviewing 250 respondents from different walks of life. Individual questionnaires were filled from 75 locals selected on the basis of their knowledge regarding people, plants and their uses. They were plant collectors, housewives, shopkeepers, elders, plant traders and Hakims, who are the actual users and have a lot of indigenous knowledge about the plants and their traditional uses. Analysis of data was made with the help of group discussions among different age classes of Darra Adam Khel that include both genders, village chief (Malik) and Medicine men (Hakims) of the society. The data was classified, tabulated, analyzed and concluded for final report.

## RESULTS AND DISCUSSION

All the information about vernacular name, use, method of preparation and administration, obtained from the informants through individual interviews, are reported in Table 1 trees, Table 2 shrub, and Table 3 herb. We have documented the use of 34 species belonging to 25 families. The dominant families are Lamiaceae with 4 species, followed by Moraceae with 3 species and then Mimosaceae, Apocynaceae, Asteraceae and Liliaceae with 2 species each. These medicinal plants use to cure about 30 - 35 types of ailment. The main ailments in this area were cough, diabetes, stomach problem, headache, jaundice, toothache and skin diseases. Leaves are the most common parts of plant used against diseases. During investigation it is noted that *Rumex hastatus* and *Monothea buxifolia* are the endangered species of the area and special care is needed. Such type of results of most of the given plant species has also been reported from other areas (Zaman, 1970; Shinwari et al., 2006). The use of *Calotropis procera* for the removal of kidney stone reported 1st time from this area.

Ethnobotany helps us in identifying conservation issues such as cases where the rate of harvest exceeds the rate of re-growth. There is an urgent need of conserving the medicinal plants that are over harvested so that in future the coming generations could be benefited from these precious plants that are a real gift of nature for the mankind. It is a collaborative venture between people in local communities and various scientists and specialists. A tragedy of the modernization is that the precious ethnobotanical knowledge is disappearing very fast, Westernization breakdown of traditional cultures and even the extinction of whole tribal groups are responsible.

A chief goal of present study is to ensure that local natural history becomes a living tradition in communities,

Table 1. Trees.

S/N	Family species (Voucher specimen)	Vernacular Name	Blooming period	Parts used	Uses	Recipe
<b>1</b>	<b>Mimosaceae</b>					
i	<i>Acacia modesta</i> (AMD1)	Palosa	March/ May	Gum, bark.	As a tonic, diabetic	Gum: it is used directly or mixed with ghure in halwa; Bark: is boiled in water, and then drunk.
ii	<i>Acacia farnesiana</i> (AFD2)	Vilayate kikar	March/ Nov	Gum.	As a tonic, leucorrhoea	Gum: is used directly or roasted, ground and mixed with ghure or sugar in halwa.
<b>2</b>	<b>Moraceae</b>					
i	<i>Ficus palmata</i> (FPD3)	Inzar	Direct fruiting	Latex, fruits.	Diuretic, laxative	Latex: is used to remove the spines easily. Fruits: are directly eaten or roasted; form powder like an ash substance; make teeth stronger; and are also used against ring worm on face and finger.
ii	<i>Morus alba</i> (MAD4)	Spin tooth	March	Fruits	Anthelmintic, purgative	Fruits: are used directly
iii	<i>Morus nigra</i> (MND5)	Tor tooth	March	Fruits	Vermifuge, purgative, laxative	Fruits: are directly used
<b>3</b>	<b>Celastraceae</b>					
	<i>Gynosporia royleana</i> (GRD6)	Sarazghai	March, April	Roots	Used against hepatitis C	Roots are boiled in water and then drunk like syrup
<b>4</b>	<b>Rhamnaceae</b>					
	<i>Zizyphus jujuba</i> (ZJD7)	Bera	July, Sept	Fruits, bark.	As a tonic expectorant, antiasthamec	Fruits: are directly used Bark: are slightly ground and applied to wounds.
<b>5</b>	<b>Meliaceae</b>					
	<i>Melia azedarach</i> (MAD8)	Bakunrah	March, April	Gum, bark.	Carminative, stomach ache,	Gum: is directly used Bark: is boiled in water and the water is drunk
<b>6</b>	<b>Oleaceae</b>					
	<i>Olea ferrugina</i> (OFD9)	Khuwand	April, May	Leaves, seeds.	Astringent	Leaves: are chewed to cure toothache. Seeds: extracted oils are used for bone fracture and wound healing
<b>7</b>	<b>Sapotaceae</b>					
	<i>Monothecha buxifolia</i> (MBD10)	Gurgura	April, May	Fruits.	Purgative, vermifuge, refrigerant	Fruits: are edible.
<b>8</b>	<b>Euphorbiaceae</b>					
	<i>Ricinus communis</i> (RCD11)	Randa	Mach/April	Leaves	As a tobacco	Leaves are warmed up, and then placed on wound for healing purposes.

where it has been transmitted orally for many years. The results of this research work can later be applied to

biodiversity, conservation and community development (Martin, 1995). All over the world the medicinal plants are

Table 2. Shrub.

S/N	Family species (Voucher specimen)	Vernacular Name	Blooming period	Parts used	Uses	Recipe
1	<b>Liliaceae</b>					
i	<i>Asparagus gracilis</i> (AGD12)	Lachghawa	January, August	Young shoots	Diuretic, aphrodisiac	Young shoots: are directly used or cooked with egg.
ii	<i>Aloe barbadensis</i> (ABD13)	Korghandal	March, April	leaves	antibiotic	Sticky fluid of leaf is used against acne.
2	<b>Rhamnaceae</b>					
	<i>Zizyphus nummularia</i> (ZND14)	Karkanrah	March, August	Fruits Leaves	As a tonic expectorant	Fruits: are directly eaten. Leaves: are chewed.
3	<b>Asclepidaceae</b>					
	<i>Calotropis procera</i> (CPD15)	Spalmey	October	Stem, Flower	Toothache, antidiarrhoeal	Stem/Branches: are directly used as toothbrush. Flower: black salt and black pepper ground together and shaped into small tablets are used for kidney stone removal.
4	<b>Apocynaceae</b>					
i	<i>Nerium oleander</i> (NOD16)	Ghagai gandaria	April, October	Leaves	Diuretic, cathartic	Leaves are mixed in water.
ii	<i>Rhazia stricta</i> (RSD17)	Sheen gandaria	March	Stem, Leaves	Antirheumatism	Leaves: are directly eaten. Stem: are directly used as toothbrush.
5	<b>Asteraceae</b>					
i	<i>Carthamus oxycantha</i> (CAD18)	Zeer azghakey	October, March	Seed	Astringent. Ulcers.	Seed oil is used against itching and ulcer
ii	<i>Helanthus annus</i> (HAD19)	Mazdegari gul		Seed	Edible	Seeds are directly eaten.
6	<b>Sapindaceae</b>					
	<i>Dodonia viscosa</i> (DVD20)	Ghurussay	January, March	Leaves	Ferbifuge, Astringent	Leaves: are ground and placed on affected place (Wound and Burn).

Table 2. Contd.

7	<b>Buxaceae</b> <i>Buxus walichiana</i> (BWD21)	Shamshad	March, October	Leaves	Diphoratic, Purgative, Rheumatism, Febrifuge	Leaves: both the grinded and juice types are directly taken as drinks; are also used against diabetes
8	<b>Solanaceae</b> <i>Withania coagulans</i> (WCD22)	Khapyanga	March, October	Fruits, Leaves	Diuretic, stomachic, sedative	Leaves: are grinded; the juice type is used as cooling agent. Fruits: are directly eaten.
9	<b>Acanthaceae</b> <i>Justicia adhathoda</i> (JAD23)	Baza	March, October	Leaves	Expectorant, antiasthamic antirheumatism	Leaves: are ground; the juice type is applied on affected place (Swelling).

Table 3. Herb.

S/N	Family species (Voucher specimen)	Vernacular Name	Blooming period	Parts use	Uses	Recipe
1	<b>Aclepidaceae</b> <i>Caralluma tuberculata</i> (CTD24)	Pawany	October	Stem	Diabetic and stomach ache Carminative and Rheumatism	Stem: is directly eaten by diabetic patient or cooked.
2	<b>Polygonaceae</b> <i>Rumex hastatus</i> (RHD25)	Teerwoki	March/ April	Leaves	Blood purification, Scurvy, Diuretic.	Leaves: are directly eaten; they are also blood purifier.
3	<b>Solanaceae</b> <i>Solanum surattene</i> (SSD26)	Mariagoni	October	Fruits/Seeds	Anthelmintic, Antiasthamic	Seeds: are kept in gums to kill tooth worm.  Fruits: are used as fodder (intestinal worm).

used with great interests and are active participants in the trade and economy of the country. In China as many as 2394 traditional Tibetan medicines are used all from plants (1106), animals (448) and natural minerals (840) (Rizwana, 2009). Many of the important medicinal plants are sold at higher prices in the market.

As Elisabetsky (1990) reported that annual world

market value of the medicines derived from the medicinal plants by the indigenous people is US \$ 43 billions. Most of the plants used by the local people are not conserved but are over exploited. It is therefore necessary to find the ways of promoting the local people towards conservation as Shenji (1994) suggested that ethnobotany is the science of documenting the traditional knowledge on the

Table 3. Cont'd.

4	<b>Cannabinaceae</b> <i>Cannabis sativa</i> (CSD27)	Bang	April, October	Leaves	Sedative, diuretic, stimulants	Leaves: are dried and grinded/crushed; they form a blackish-like substance called chars. The leaves can be boiled in water, and then mixed with milk etc to form Bhang. They are also cooling agents.
5	<b>Zygophyllaceae</b>					
i	<i>Peganum harmala</i> (PHD28)	Spilanay	April, October	Seeds, leaves.	Cough, Carminative Rheumatism, Astringent	Seeds and leaves: are smoked to repel evil sight and mosquitoes. They are also used to remove bad smell.
ii	<i>Pegonia cretica</i> (PCD29)	Azgakey	March, April	Leaves		Decoction is used as blood purifier and also for treatment of hepatitis.
6	<b>Plantaginaceae</b>					
	<i>Plantago lanceolatum</i> (PLD30)	Asphaghul	April	Seeds/ husk	Haemostatic, Diuretic, As a purgative, Mouth diseases	Seeds: are mixed with sugar, with some water added and then kept in a cup, for some time before eaten.
7	<b>Lamiaceae</b>					
i	<i>Teucrium stocksianum</i> (TSD31)	Masstura	October	Leaves, Stem	Cooling agent, Diabetic	Leaves, stem: are kept in water for some time or boiled before taken as water
ii	<i>Mentha longifolia</i> (MLD32)	Valani	June/August	Leaves	Carminative, Diarrhea, Colic, Gastric problem	Leaves: are used or mixed with tomato, pepper etc to make chatni.
iii	<i>Ajuga bracteose</i> (ABD33)	Kauri booti	March/April	Whole plant	Anti diabetic	Decoction is used against diabetes
iv	<i>Mentha arvensis</i> (MAD34)	Pudina	June/August	Leaves.	Carminative, Stomach ache Stimulant	Leaves: are used or mixed with tomato, pepper etc to make chatni used as food

use of plants by the indigenous people and for further assessing human interactions with the natural environment.

### Conclusion

The richness of medicinal plants was decreasing with increasing altitude, but the percentage of plants used as medicine steadily increased with increasing altitude in Darra Adam Khel most people still practice traditional knowledge of medicinal plants. It revealed that the people of the area possessing good knowledge of herbal drugs but as people are going to modernization; their knowledge of traditional uses of plants may be lost in due course. So it is important to study and keep the record of the uses of plants by different tribes for studies on scientific basis. Such studies may also provide some information to biochemist and pharmacologist in screening of individual species and in rapid assessing of phyto-chemical constituent and bioanalysis for authentic treatment of various diseases.

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