

## MEDICO-ETHNOBOTANICAL INVENTORY OF TEHSIL CHAKWAL, PAKISTAN

RAHMATULLAH QURESHI\*, ABDUL WAHEED, MUHAMMAD ARSHAD  
AND TALLAT UMBREEN

Department of Botany, Pir Mehr Ali Arid Agriculture University,  
Murree Road Rawalpindi, Pakistan.

### Abstract

The aim of present research was to record the indigenous knowledge about medicinal plants of Tehsil Chakwal. Field trips were arranged to collect the plants and ethnobotanical information from the study area during October, 2007 to January, 2008. A total of 29 species belonging to 25 genera and 18 families have been found to be used by the local people for curing various human diseases. This paper contains the information like botanical name, local name, family name, flowering season, part used and folk medicinal uses of plants. The plant specimens were also collected dried, pressed, mounted on sheets and deposited in the Herbarium of Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi for record.

### Introduction

Medicinal plants have been used since prehistoric period for the cure of various diseases. Since these are in common use by the local people and are of great importance that's why a lot of people are engaged in the trade of important medicinal herbs throughout the world (Elisabetsky, 1990). Especially, people living in villages have been using indigenous plants as medicines since ages because this knowledge transfers from generation to generation and is based on life long experiences. Besides, the villages are far away from cities and mostly lack proper health facilities (Shinwari & Khan, 2000).

This field is well established and a lot of work has been done worldwide. Rhadakrishman *et al.*, (1998) reported ethnobotanical information on *Ulteria salicifolia*, a monotypic species endemic to south Western Ghats of peninsular India and gave its taxonomic identity, distribution pattern and affinity to an allied genus for the first time. Beyra *et al.*, (2004) carried out an ethnobotanical survey from Camaguey, Cuba and reported 111 plant species belonging to 96 genera and 55 families from the study area. These species are used in the treatment of 173 local health problems in the study area. Bondya & Sharma (2004) conducted a survey of medicinal plants used in diabetes in Jharkhand and collected 11 plant species with remarkable uses. Buckingham (1991) reported that there are total of 2,50,000 species of flowering plants in the world, much less than animal species (5-10 million) however, plants contribute to our lives more than animals mainly due to their extra ordinary array of diverse classes of biochemicals with a variety of biological activities. Ji *et al.*, (2004) reported the medico-ethnobotany of Nuijiang, Northwest Yunnan, China. They described 52 medicinal plant species belonging to 32 families used for the treatment of various human ailments. Among them, 11 species were reported as rare and 16 were commercially utilized.

\*Email: rahmatullahq@yahoo.com; phytotaxonomist@gmail.com  
Tel. +9251-9290093; +92300-6730496

This field is quite new in Pakistan specially to work on scientific basis. Malik *et al.*, (1990) gathered some preliminary ethnobotanical information from 6 district of Baluchistan. Goodman & Ghafoor (1992) carried out an ethnomedicinal survey from Baluchistan province. They collected 114 plant species used by the local inhabitants for medicinal purpose. Leporatti & Lattanzi (1994) described 27 medicinal plants ethnobotanically collected from Makran (Southern Pakistan). Ali & Ahmad (1998) reported some medicinally important plants and their uses. They collected 115 plants with brief medicinal uses. They described various parts of plants, which effectively cured various diseases like asthma, cough, tons disorder, whooping cough and chronic bronchitis. Sher *et al.*, (2000) reported that the plant kingdom had immensely contributed to health needs of man when no synthetic medicines were available and when no concept of surgical management existed. Even today almost 25% of all prescribed medicines in the developed world contain ingredients derived from medicinal plants. Shinwari & Khan (2000) described 50 herbs belonging to 27 families which are being used medicinally by the local inhabitants of Margalla Hills National Park, Islamabad, Pakistan. Of them, 10 species are being sold in the local market. Qureshi *et al.*, (2001) carried out ethnic medicinal uses of *Aloe barbadensis* in Nara Desert. They reported traditional/medicinal uses of this plant particularly in digestive troubles of local people and their livestock. Qureshi & Bhatti (2007) carried out an ethnobotanical study on wild gourd (*Citrullus colocynthis*) from Nara Desert, Sindh. They described details of taxonomic characters and ethnomedicinal uses of the plant from Nara Desert, Sindh. In continuation of that, Qureshi & Bhatti (2008) conducted out an extensive ethnobotanical survey from Nara Desert, Pakistan. They reported 51 plant species belonging to 43 genera and 28 families which are being used medicinally by local inhabitants of the Nara Desert. They reported 21 species possessing new uses not being recorded in the Indo-Pak medicinal literature. There are various other studies carried out by various scientists of the country (Hocking, 1958, 62; Shinwari & Malik, 1989; Khan, 1994; Shinwari *et al.*, 1996; Bhatti *et al.*, 1998, 2001; Qureshi *et al.*, 2002; Qureshi, 2002, 2004). Since there is sporadic information on the ethnobotany of Tehsil Chakwal, therefore, present study was conducted and is being reported for dissemination of information gathered.

## Materials and Methods

**Location and climate:** Chakwal is located in the south of Rawalpindi at a distance of 97 km. It lies between 32° 56' north and 72° 54' east. The environment is cool with subhumid climate. The colour of the soil of this area is brown. Almost 90% population lives in rural areas. Vegetation of Chakwal is scrubby (Anon., 2007).

The rainfall mostly received during monsoon season in between mid of July to the mid of September with the range of 350-500 mm. The winter rain begins in January and persists up to beginning of March. The mean monthly temperature ranges 5.9-38.4°C, whereas January being the coldest and June the hottest month of the year. Temperature during summer is 15-40°C and during winter is 4-25°C. In winter the temperature often drops below zero, usually in December and January.

**Collection of ethnomedicinal data:** The selected area was surveyed from October, 2007 to January, 2008 and the specimens were collected. A questionnaire was made to collect information about the uses of medicinal herbs used by the local inhabitants of Tehsil Chakwal to cure various diseases. Normally, the elderly known people including men and women, who were familiar with traditional uses of indigenous herbs were interviewed for the extraction of folk knowledge. The collected specimens were identified with the help

of scientific material (Nasir & Ali 1970-1989; Ali & Nasir 1990-1991; Ali & Qaiser, 1993-2008; Nasir & Rafiq, 1995). The identified specimens were deposited in the Herbarium of Pir Mehr Ali Shah Arid Agricultural University, Rawalpindi for future record and references.

## Results

A total of 29 species belonging to 25 genera and 18 families have been found to be used by the local people for curing various human diseases. All plants are alphabetically arranged. The detail enumerations are presented in the format like botanical name, local names, family and part used of medicinal herbs in the area.

1. **Botanical name:** *Ajuga bracteosa* Wall. ex Benth.  
**Local name:** Kauri Booti  
**Family:** Lamiaceae  
**Part used:** Leaves  
**Specimen No.** 07  
**Ethno-botanical uses:** Used in curing headache, pimples, measles and stomach acidity. The same is also used in internal colic and for the treatment of acnes. The decoction of leaves used for curing jaundice, hypertension and sore throat and to relieve constipation.
2. **Botanical name:** *Amaranthus ovalifolius* L.  
**Local name:** Choleri  
**Family:** Amaranthaceae  
**Part Used:** Leaves  
**Specimen No.** 28  
**Ethno-botanical uses:** The leaves are used as potherb as laxative.
3. **Botanical name:** *Amaranthus virdis* L.  
**Local name:** Cholai  
**Family:** Amaranthaceae  
**Part used:** Leaves  
**Specimen No.** 25  
**Ethno-botanical uses:** Leaves are used against flue and fever. The crushed leaves are applied on scorpion sting and snake bite. The leaves are used as potherb as laxative.
4. **Botanical name:** *Asphodelus tenuifolius* Cavan  
**Local name:** Piazi  
**Family:** Liliaceae  
**Part used:** Whole plant  
**Specimen No.** 14  
**Ethno-botanical uses:** Cooked with maize bread used as a condiment.
5. **Botanical name:** *Atriplex* sp.  
**Local name:** Gerukh pari  
**Family:** Chenopodiaceae  
**Part used:** Leaves, whole plant  
**Specimen No.** 26  
**Ethno-botanical uses:** The leaves are boiled in water and the obtained juice

		used in blood purification against boils. It is also used in fever, jaundice, dropsy and liver disease etc. the paste of leaves is applied on wounds. Plant ash mixed with sesame oil is applied externally for rheumatic pain.
<b>6.</b>	<b>Botanical name:</b>	<i>Cannabis sativa</i> L.
	<b>Local name:</b>	Bhang
	<b>Family:</b>	Cannabinaceae
	<b>Part used:</b>	Seeds, leaves
	<b>Specimen No.</b>	10
	<b>Ethno-botanical uses:</b>	The whole plant is narcotic, anticonvulsant, antidiarrhoeal, sedative, tonic, refrigerant. Juice added with milk and nuts to make "Thandai" a cold drink which produces a pleasant excitement and astringent.
<b>7.</b>	<b>Botanical name:</b>	<i>Sisymbrium irio</i> L.
	<b>Local name:</b>	Khoob Kalan
	<b>Family:</b>	Brassicaceae
	<b>Part used:</b>	Seeds
	<b>Specimen No.</b>	15
	<b>Ethno-botanical uses:</b>	Seeds are used in dropsy.
<b>8.</b>	<b>Botanical name:</b>	<i>Chenopodium album</i> L.
	<b>Local name:</b>	Bathu
	<b>Family:</b>	Chenopodiaceae
	<b>Part used:</b>	Roots, tender branches and leaves, seeds
	<b>Specimen No.</b>	16
	<b>Ethno-botanical uses:</b>	Used as potherb as a laxative and fodder for cattle. Roots used in Jaundice and urinary problem. Oil extracted from seeds is used as an intestinal worm killer.
<b>9.</b>	<b>Botanical name:</b>	<i>Chenopodium ambrisoides</i> L.
	<b>Local name:</b>	Chandan Bathu
	<b>Family:</b>	Chenopodiaceae
	<b>Part used:</b>	Whole plant
	<b>Specimen No.</b>	09
	<b>Ethno-botanical uses:</b>	Paste of leaves and stem applied externally to relieve backache and joints pain and inflammation. Powder of dried leaves mixed with soup is used for cough and to stop motions in infants. Seeds are stimulant, diuretic and astringent used in dropsy.
<b>10.</b>	<b>Botanical name:</b>	<i>Commelina benghalensis</i> L.
	<b>Local name:</b>	Kana Keerai
	<b>Family:</b>	Commelinaceae
	<b>Part used:</b>	Whole plant
	<b>Specimen No.</b>	04
	<b>Ethno-botanical uses:</b>	Leaves are used as vegetable used in treating bedsores, breast sores and pimples.
<b>11.</b>	<b>Botanical name:</b>	<i>Convolvulus arvensis</i> L.
	<b>Local name:</b>	Lehli

<b>Family:</b>	Convolvulaceae
<b>Part used:</b>	Whole plant
<b>Specimen No.</b>	17
<b>Ethno-botanical uses:</b>	The whole plant is used as purgative. It is also used in abdominal worms and abdominal pain. The paste of tender shoots applied in skin disorders.
<b>12. Botanical name:</b>	<i>Coronopus didymus</i> L.
<b>Local name:</b>	Thandi Booti
<b>Family:</b>	Brassicaceae
<b>Part used:</b>	Whole plant
<b>Specimen No.</b>	29
<b>Ethno-botanical uses:</b>	Used as cooling and refrigerant. The plant is used as fumigants for insect repellent.
<b>13. Botanical name:</b>	<i>Dicliptera roxburghiana</i> Nees
<b>Local name:</b>	---
<b>Family:</b>	Acanthaceae
<b>Part used:</b>	Leaves, flower top
<b>Specimen No.</b>	09
<b>Ethno-botanical uses:</b>	The powder is used as general tonic.
<b>14. Botanical name:</b>	<i>Euphorbia prostrata</i> L.
<b>Local name:</b>	Hazaar Dani
<b>Family:</b>	Euphorbiaceae
<b>Part used:</b>	Whole plant
<b>Specimen No.</b>	18
<b>Ethno-botanical uses:</b>	Decoction and its paste is used against fungi causing skin diseases especially ringworm. Used in chronic fevers, abdominal diseases and as nerve tonic & blood purifier.
<b>15. Botanical name:</b>	<i>Fumaria indica</i> (Husskn.) H.N. Pugsley
<b>Local name:</b>	Shahtra papra
<b>Family:</b>	Fumariaceae
<b>Part used:</b>	Whole plant
<b>Specimen No.</b>	19
<b>Ethno-botanical uses:</b>	Shoots are used in diarrhoea, as cooling agent and blood purifier. The whole plant is used in fever, as liver tonic for hepatic ailment. Fresh plant is crushed and obtained juice is given orally for blood purification.
<b>16. Botanical name:</b>	<i>Ipomoea pentaphylla</i> (L.) Jacq.
<b>Local name:</b>	Kaan Kati
<b>Family:</b>	Convolvulaceae
<b>Part used:</b>	Seeds
<b>Specimen No.</b>	27
<b>Ethno-botanical uses:</b>	Used in Jaundice. Seeds mixed with sugar and castor oil used against intestinal pain and worms. Seeds mixed with vinegar used against swelling.
<b>17. Botanical name:</b>	<i>Malva parviflora</i> Wall.
<b>Local name:</b>	Sonchal

	<b>Family:</b>	Malvaceae
	<b>Part used:</b>	Whole plant
	<b>Specimen No.</b>	22
	<b>Ethno-botanical uses:</b>	Plant is boiled in water to make decoction which is used to cure cough flue and fever.
18.	<b>Botanical name:</b>	<i>Malvastrum coromandelianum</i> (L.) Caske
	<b>Local name:</b>	Damhni plant
	<b>Family:</b>	Malvaceae
	<b>Part used:</b>	Leaves, flowers
	<b>Specimen No.</b>	01
	<b>Ethno-botanical uses:</b>	Leaves are crushed and made into paste to relieve pain. Flowers are used as diaphoretic. Decoction is resolvent.
19.	<b>Botanical name:</b>	<i>Morus alba</i> L.
	<b>Local name:</b>	Sufaid Toot
	<b>Family:</b>	Moraceae
	<b>Part used:</b>	Root, leaves
	<b>Specimen No.</b>	11
	<b>Ethno-botanical uses:</b>	The fruits are laxative and emollient, used for cleaning throat, cooling agent and astringent.
20.	<b>Botanical name:</b>	<i>Oxalis corniculata</i> L.
	<b>Local name:</b>	Khati Booti
	<b>Family:</b>	Oxalidaceae
	<b>Part used:</b>	Fruit, seeds
	<b>Specimen No.</b>	05
	<b>Ethno-botanical uses:</b>	Plant sap is used to cure skin diseases. Leaves are used in snake bite. Leaves are used as cooling agent and refrigerant in stomach disorders, fever and acute headache. Plant pounded with cumin seeds are taken with water thrice a day for dysentery. It is also used for sensitive teeth.
21.	<b>Botanical name:</b>	<i>Parthenium hysterophorus</i> L.
	<b>Local name:</b>	Chatak chandni
	<b>Family:</b>	Asteraceae
	<b>Part used:</b>	Whole plant
	<b>Specimen No.</b>	23
	<b>Ethno-botanical uses:</b>	It has stimulating activity which is used for flue repellent. The decoction of plant is used in dysentery.
22.	<b>Botanical name:</b>	<i>Ricinus communis</i> L.
	<b>Local name:</b>	Arand
	<b>Family:</b>	Euphorbiaceae
	<b>Part used:</b>	Whole plant
	<b>Specimen No.</b>	13
	<b>Ethno-botanical uses:</b>	Decoction of stem, berries of castor plant and <i>Cissus quadrangularis</i> and <i>Vitex negundo</i> leaves applied on the affected area for rheumatic swelling and arthritis. Leaves are narcotic, poisonous and purgative. Poultice of leaves is applied to swellings. The leaves coated

		with sesame oil slightly warmed over fire and applied on painful swellings. Castor oil is given in constipation before and after child birth to mother.
<b>23. Botanical name:</b>	<i>Solanum nigrum</i> L.	
<b>Local name:</b>	Kaach Maach	
<b>Family:</b>	Solanaceae	
<b>Part used:</b>	Berries, leaves	
<b>Specimen No.</b>	24	
<b>Ethno-botanical uses:</b>	Tea of younger leaves is used for curing flue, cough and fever. Dried fruits are used for stomach diseases. Cooked as potherb and used to cure inflammation of internal organs. Poultice of leaves is applied on burnt skins and wounds.	
<b>24. Botanical name:</b>	<i>Solanum surattense</i> Burm.f.	
<b>Local name:</b>	Kandiari/Chhoti Mahokari	
<b>Family:</b>	Solanaceae	
<b>Part used:</b>	Berries, flower	
<b>Specimen No.</b>	20	
<b>Ethno-botanical uses:</b>	Juice obtained from flower and mature fruit is mixed with honey and used in chronic coughs and pain. Leaves externally applied as poultice to relieve pain. Berries are used in toothache and juice is applied to broken organs.	
<b>25. Botanical name:</b>	<i>Sonchus arvensis</i> L.	
<b>Local name:</b>	Dodh Bhatal	
<b>Family:</b>	Asteraceae	
<b>Part used:</b>	Stem, leaves	
<b>Specimen No.</b>	03	
<b>Ethno-botanical uses:</b>	Used as cool tonic and in phthisis.	
<b>26. Botanical name:</b>	<i>Sonchus asper</i> L.	
<b>Local name:</b>	---	
<b>Family:</b>	Asteraceae	
<b>Part used:</b>	Whole plant	
<b>Specimen No.</b>	21	
<b>Ethno-botanical uses:</b>	The fresh plant crushed and made into paste which is applied on wounds and boils.	
<b>27. Botanical name:</b>	<i>Trianthema portulacastrum</i> L.	
<b>Local name:</b>	Itsit	
<b>Family:</b>	Aizoaceae	
<b>Part used:</b>	Whole plant	
<b>Specimen No.</b>	02	
<b>Ethno-botanical uses:</b>	Leaf paste is applied on wounds. Plant ash mixed with sesame oil is applied externally in rheumatism. The juice of the plant is used in fever, jaundice, dropsy and liver disease.	
<b>28. Botanical name:</b>	<i>Tribulus terrestris</i> L.	
<b>Local name:</b>	Bakra	
<b>Family:</b>	Zygophyllaceae	

<b>Part used:</b>	Leaves
<b>Specimen No.</b>	06
<b>Ethno-botanical uses:</b>	Fruit powder is given orally to cure urinary disorders and mixed with sugar is given to ease delivery. The powder of fruits is taken orally with a glass of milk by rural men to cure impotency.
<b>29. Botanical name:</b>	<i>Withania somnifera</i> (L.) Dunnel.
<b>Local name:</b>	Asgand
<b>Family:</b>	Solanaceae
<b>Part used:</b>	Roots
<b>Specimen No.</b>	12
<b>Ethno-botanical uses:</b>	Root paste is applied in rheumatism, painful swellings, ulcers and bleeding wounds. To cure asthma, burnt root powder with butter is taken every day early morning. This preparation is also used in cough, uterine disease, expel phlegm and as aphrodisiac, puerperal tonic. Roots are used in debility of old age people.

## Discussion

Plant based drugs have been in use against various disease since the time immemorial. The primitive man used herbs as therapeutic agents and medicament, which they were able to procure easily. The nature has provided abundant plant wealth for all living creatures, which possess medicinal virtues (Bhatti *et al.*, 1998). The essential values of some plants have long been published but a large number of them remained unexplored as yet. Before carrying out plant pharmacokinetic and pharmacological activity, there is need to record ethnobotanical uses of plants of an area to establish their therapeutic properties (Baquar, 1989).

Medicinal plants are an important source of drugs in traditional system of medicine (Sher & Hussain, 1998a). They are valuable natural resources and regarded as potentially safe drugs. In addition, they are playing an important role in alleviating human suffering by contributing herbal medicines in primary health care system of rural and remote areas where more than 70% of population depends on folklore and traditional system of medicines. The reason for their popularity is due to high cost of allopathic medicines and side effects which encouraged manufacturers of Greco-Arab and Ayurvedic systems of medicines to merge their orthodox medicine with local traditional medicines in order to spread health coverage at a reasonable price (Shinwari & Khan, 2000). Singh (2007) reviewed that 60% of synthetic drugs have roots in medicinal plants and the efficacy of some herbal products is beyond doubt. He quoted the most recent examples being *Artemisia annua* (i.e., artemesinin: wormwood derivative used to target cancers), *Silybum Marianum* (i.e., silymarin: seeds of the milk thistle effective in treating diseases of the liver) and *Taxus brevifolia* (i.e., taxols: pacific yew derivative that exhibits antimitotic activity and is used for treating refractory tumors).

Pakistan occupies a unique position among developing countries as it has a good potential in terms of diversity and heritage of medicinal plants due to its varied climatic and edaphic factors. About 6000 flowering plants have been reported to occur in Pakistan. A very large number of drug plants are found in northern and northwestern parts of country (Ali & Qaisar, 1986).

The present endeavor was therefore, to document the inventory of economic and medicinal herbs along with their local uses, names, part used. Some plants are used singly, while many others are used in combination with other plants or items. Similarly, certain medicinal plants are considered useful in only one specific disease whereas several others have multiple uses. This study showed that the plants play an important role in the traditional system of medicine of local population. The results of this work can later be applied to biodiversity, conservation and community development (Martin, 1995).

## Conclusion

The relationship between people and plants has always been profoundly important. Plants play an important role in every aspect of our lives and without them life is not possible. Plants not only regulate the concentration of gases in the air, but also the only organisms capable of transforming sunlight into food energy on which all other forms of life ultimately depend upon.

Income from collection and sale of medicinal plants is thought to be marginalized by lack of awareness regarding local and overseas market requirement, local shopkeepers, agents and *Hakeems*. The consumers obtain supplies from individuals who have little experience in medicinal herb preparations or in understanding of its value. As a result valuable economic and medicinal plants of the investigated area are becoming rare and some are at the verge of local extinction. Therefore, efforts should be to conserve these valuable plants for future generations.

## References

Ali, S.I. and Y.J. Nasir (Eds.), 1990-1991. *Flora of Pakistan (Fasciles series)*, Islamabad, Karachi.

Ali, S.I. and M. Qaiser (Eds.), 1993-2008. *Flora of Pakistan (Fasciles series)*, Islamabad, Karachi.

Ali, S. I. and M. Qaiser. 1986. A phytogeographical analysis of Phanerogams of Pakistan and Kashmir. *Proc. Royal Soc. Edingburg*, 89(3): PP 89-101.

Ali, M.S. and V.U Ahmed. 1998. Some medicinally important plants and their uses. *Hamdard Medicus*, 41(2): 96-108.

Anonymous. 2007. *Atlas of Pakistan*, Survey of Pakistan, Murree Road, Rawalpindi.

Beyra, A., M. Del, C. Leon, E. Iglesias, D. Ferrandiz, R. Herrera, G. Volpato, D. Godinez, M. Guimarais and R. Alvarez. 2004. Ethnobotanical studies of medicinal plants in the province of Camaguey (Cuba). *Anales del Jardin Botanico de Madrid*, 61(2): 185-203.

Bhatti, G.R., R. Qureshi and M. Shah. 1998. Ethnobotany of *Calotropis procera* with especial reference to the people of Nara Desert. *Scientific Sindh*, 5: 13-22.

Bhatti, G. R., R. Qureshi and M. Shah. 2001. Ethnobotany of Qadanwari of Nara Desert. *Pak J. Bot.* 33(special issue): 801-812.

Baquar, S. R. 1989. *Medicinal and Poisonous plants of Karachi, Pakistan*. pp: 95-96, 184-185, 248-241, 337-440.

Bondya, S.L. and H.P. Sharma. 2004. Ethnobotanical studies on plants used in diabetes (Madhumeha) under the Baharagora Block of Jharkhand. *Ethnobot.*, 16 (1/2): 139-140.

Buckingham, J. 1991. *Dictionary of Natural Compounds*. Chapman and Hall U.K.14-20 pp.

Elisabetsky. 1990. Plants used as analgesics by Amazonian caboclos. *International Journal of Crude Drug Research*, 28: 309-320.

Goodman, S.M. and A.Ghafoor. 1992. The ethnobotany of Southern Baluchistan. Pakistan, with particular reference to medicinal plants. *Fieldiana: Botany*, 84 pp.

Hocking, G.M. 1958. *Pakistan Medicinal plants I*, Qualitos Plantarum Et. Material vegetables (5): 145-153.

Hocking, G.M. 1962. Pakistan Medicinal Plants-IV. *Qualitas Plantarum et Material Vegetabiles*, 9: 103-119.

Ji, H., P. Shengji and L. Chunlin. 2004. An ethnobotanical study of medicinal plants used by the Lisu people in Najiang, Northwest Yunnan, China. *Econ. Bot.*, 58(suppl.): 253-264.

Khan, A. U. 1994. History of decline and present status of natural tropical thorn forest in Punjab. *Biological Conservation*, 67: 205-210.

Leporatti, M.L. and E. Lattanzi. 1994. Traditional phytotherapy on coastal area of Makran (Southern Pakistan). *Fitoterapia*, 65(2): 157-161.

Malik, S.M., M. Shan and Q. Marwat. 1990. *Ecotaxonomical evaluation of valuable plants of Balochistan, Pakistan*. Project Rep. No. 123. Pakistan Science Foundation, Islamabad.

Martin, G.J. 1995. *Ethnobotany, A people and plants conservation manual*. Chapman and Hall London, New York, Tokyo. pp. 23-29.

Nasir, E. and S.I. Ali. (Eds.), 1970-1989. *Flora of Pakistan (Fascicles series)*, Islamabad, Karachi.

Nasir, Y.J. and R.A. Rafique. 1995. *Wild flowers of Pakistan*. T.J. Roberts. Oxford University Press, Karachi.

Qureshi, R and G.R. Bhatti. 2008. Ethnobotany of plants used by the Thari people of Nara Desert, Pakistan. *Fitoterapia*, 79: 468-473.

Qureshi, R. and G.R. Bhatti. 2007. Wild Gourd: A Green Medicine. *Hamdard Medicus*, 50(1): 156-162 pp.

Qureshi, R. 2002. Ethnobotany of Rohri Hills, Sindh, Pakistan. *Hamdard Medicus*, 45(3): 86-94.

Qureshi, R. 2004. *Floristic and Ethnobotanical Study of Desert Nara region, Sindh*. (Ph.D. Thesis), Department of Botany, Shah Abdul Latif University, Khairpur, Sindh, Pakistan. Vol. I.

Qureshi, R., G.R. Bhatti and A. Saeed. 2002. Obnoxious-Mankind's Need. *Hamdard Medicus*, 45(2): 82-87.

Qureshi, R., Bhatti, G.R. and M. Shah. 2001. Ethnomedicinal properties of *Aloe barbadensis* Mill. with particular reference to the people of Nara Desert. *Hamdard Medicus*, 44(3): 46-50.

Radhakrishnan, K., A.G. pandurang and P. Pushpanganda. 1998. *Uteria salicifolia*. A new Ethnobotanical record from Kerala, India. *Fitoterapia*, 69(5): 403-405.

Sher, H. and F. Hussain. 1998a. Income generation from the trade and cultivation of medicinal plants for local communities in district Swat, Pakistan. *Proc: Wild plants resources of Northern Pakistan*, workshop PFI, Peshawar May 11-12-1998: pp. 48-51.

Sher, H., M. Ahmad and C.M. Iqbal. 2000. *Market survey of medicinal plants in major cities of Pakistan, their use and future prospects*. Swiss Purled. Development Cooperation. Berne. Switzerland, 33-47.

Shinwari, Z.K. and S. Malik. 1989. Plant Wealth of Dera Bugti area. *Progressive Farming*, (9): 39-42.

Shinwari, Z.K., Shah, M. and R. Awan. 1996. *The ethnobotany of Kharan District Baluchistan. Symposium on medicinal plants*. University of Peshawar, Peshawar.

Shinwari, M.I. and M.A. Khan. 2000. Folk use of medicinal herbs of Margalla hills National Park, Islamabad. *J. Ethnopharm*, 69: 45-56.

Singh, A.P. 2007. Ethics in Herbal Medicine. <http://www.siu.edu/~ebi/leaflets/ethics.htm>.

(Received for publication 28 August 2008)