

Full Length Research Paper

Indigenous medicinal knowledge of common plants from district Kotli Azad Jammu and Kashmir Pakistan

Adeel Mahmood^{1*}, Aqeel Mahmood², Ghulam Mujtaba³, M. Saqlain Mumtaz⁴,
Waqas Khan Kayani⁴ and Muhammad Azam Khan⁵

¹Department of Plant Sciences, Quaid-I-Azam University, Islamabad, Pakistan.

²Faculty of Pharmacy, University of Sargodha, Sargodha, Pakistan.

³Department of Microbiology, Quaid-I-Azam University, Islamabad, Pakistan.

⁴Department of Biochemistry, Quaid-I-Azam University, Islamabad, Pakistan.

⁵Government Post Graduate College (Boys) Hajira, Poonch Azad Jammu and Kashmir, Pakistan.

Accepted 17 May, 2012

From ancient times, plants are being used in treatment of various diseases. Many of today's drugs have been derived from plant sources. This research work reveals the indigenous medicinal knowledge of important medicinal plants from district Kotli Azad Jammu and Kashmir (AJK), Pakistan. A total 25 common medicinal plants belonging to the 14 families were reported. Their medicinal and other botanically important uses are described by conducting a meeting and interviews from a total of 137 local inhabitants including 73 males, 47 females and 17 Hakims (herbal specialists). Primary source of indigenous medicines were herbs (56%), shrubs (28%) and trees (16%). Herbal preparations were made by the different plant parts. Most common plant part used to make the herbal preparation was leaf (39%) followed by the root (19%), whole plant (12%), seed (9%), bark (7%), fruit (7%), flower (5%) and tuber (2%).

Key words: Ethnobotany, Kotli, Azad Jammu and Kashmir, indigenous knowledge.

INTRODUCTION

Man has cultivated the habit of observing plants for thousands of years and had used them for different purposes. The Science of Botany today is the result of many years of progress and development in plant for their curative virtues (Bartran, 1995). Botany, in turn, originated in part from an interest in finding plants to help fight illness. In fact, medicine and botany have always had close ties. Ethnobotany is a multi-disciplinary science encompassing botany, anthropology, economics, and linguistics, which thus study the ways in which a society relates to its environment. These relationships can be social, economic, symbolic, religious, commercial and artistic (Mahmood et al., 2011b).

Ethnobotany is the study of how people of a particular culture and region make use of indigenous plants;

moreover, how plants are used for such things as food, shelter, medicine, clothing, hunting and religious ceremonies. How cultures work? By necessity, Ethnobotany is multidisciplinary. This approach gives insight into the management of plant sources in the period of tremendous environmental stress (Mahmood et al., 2011a).

The term was first used by an American Botanist Harshberger in 1895 to study plants used by primitive and aboriginal people. Later, Jones (1941) and Ford (1978) refined ethnobotany by using modern ecological term. According to Pie (1995), it is the study of direct interaction between human and plant population through its culture. They developed attitudes and beliefs about plants. They also learnt that use of plants impose same limitations on them. These mixture-interactions are called ethnobotany. It promotes traditional culture, local remedies, forest management practices and tradition knowledge transformation to next generation. It improves

*Corresponding author. E-mail: fnewtan@gmail.com

self-confidence of minorities and enhances their social and cultural values (Qasim et al., 2010).

Ethnobotanical approaches enable the establishment of close dialogue and communication with local people, and may ultimately facilitate the elaboration of management plans which ensure participation by local people and avoid having an adverse impact on their life and their environment (Martin, 1995; Cunningham, 2001).

From ancient times, plants are being used in treatment of various diseases. Many of today's drugs have been derived from plant sources. Pharmacognosy is the study of medicinal and toxic products from natural plant sources (Gilani et al., 2007, 2010). More than 6,000 species are used as medicines. Elizabeth (1990) reported that Annual World Market value for medicine drives from medicinal plants is \$43 billion. More than 75% of Pakistani population depends on traditional medicines for all or most of its medicinal needs (Shinwari and Qaisar, 2011). Ethnopharmacological study do not only envisage the possibility of identifying new herbal drug, but also brings on record the hidden knowledge confined to traditional society all over the world (Leporatti, 1990).

Traditional management systems and their relationships to larger economic systems has been the subject of numerous studies using ethnobiological methods (Johnson et al., 1980; Alcorn, 1984; Altieri and Merick, 1987; Aumeeruddy, 1994; Pei and Sajise, 1995). All these studies give much attention to conservation practices underlying local practices, local institutions background, and conflicts of worldviews and value systems.

The contribution of applied ethnobotany is not limited to pure science, but has an important role to play in understanding the dynamic relationships between biological diversity and social and cultural systems and their development. The present research was conducted in district Kotli, Azad Jammu and Kashmir (AJK), Pakistan to explore the valuable medicinal resource that are commonly used in local health care system (Shaheen et al., 2012).

MATERIALS AND METHODS

A survey was conducted to get the basic information regarding to the study area. The ethnobotanical survey was conducted from September, 2011 to December, 2011. Kotli district, AJK, Pakistan is located between longitude 73° 6' to 74° 7' East and latitude 33° 20' to 33° 40' North According to 1999 census, the total population of the district stand at 0.558 and total area is 1862 km². The methodology was based on interviews using questionnaire of information. Total number of interviews conducted were 97 consisting of 57 males, 20 females and 20 Hakims. The interviewers were mainly old people, as they have sufficient information about the medicinal properties of local plants. Hakims were also consulted, as they are more aware to the medicinal plants and their proper usage. Plant collected from study area were identified and finally deposited in the Herbarium of the Department of Plant Sciences, Quaid-i-Azam University Islamabad (ISL), Pakistan. Questionnaire form was compiled in an ordered form.

RESULTS

Acanthaceae

Species name: *Justicia adhatoda* L.
Status: Shrub
Local name: Baker
Part used: Leaves
Altitude: 676 m.

Folk medicinal uses: Leaves are officious in asthma, bronchitis, fever, and rheumatism; they also have insecticidal properties. Liquor of leaves is used in cough, chronic bronchitis and asthma. Its other aspects like ecological difference versus chemical composition etc. are well reported by Gilani et al. (2011).

Adiantaceae

Species name: *Adiantum venustum* D. Don.
Status: Herb
Local name: Fern
Part used: Whole plant
Altitude: 676 m

Folk medicinal uses: Decoction of the whole plant is used in fever, cold, headache and in biliousness. Oil is useful in piles. Leaves are diuretic and emmenagogue.

Agavaceae

Species name: *Agave contala* Roxb.
Status: Shrub
Local name: Sandal
Part used: Leaves
Altitude: 676 m

Folk medicinal uses: The leaves poultices are applied externally for rheumatism to relieve pain. It is applied to wound as anti-septic in powdered form.

Species name: *Aloe vera* (L.) Burm. F.
Status: Herb
Local name: Kanwar gandal
Part used: Leaves
Altitude: 723 m

Folk medicinal uses: Leaf extract is mixed with coconut oil and used as hair tonic. Leaf extract is applied on head to relieve headache and also used for acne.

Amaranthaceae

Species name: *Achyranthus aspera* L.

Status: Herb
Local name: Pootha kanda
Part used: Whole plant
Altitude: 610 m

Folk medicinal uses: Leaf paste is used for piles and dog bite. Whole plant is carminative, anodyne, anthelmintic and useful in cough, asthma and skin diseases.

Species name: *Amaranthus spinosus* L.
Status: Herb
Local name: Gahnar
Part used: Whole plant
Altitude: 669 m

Folk medicinal uses: The plant is laxative, diuretic, appetizer, febrifuge and useful in leprosy, bronchitis, flatulence, intermittent fever and general debility.

Species name: *Amaranthus viridis* L.
Status: Herb
Local name: Ganhari
Part used: Whole plant
Altitude: 669 m

Folk medicinal uses: Plant is antidote, tonic, diuretic and emollient. Leaf extract is best for constipation. Whole plant is used as vegetable.

Anacardiaceae

Species name: *Mangifera indica* L.
Status: Tree
Local name: Aam
Part used: Fruit, leaves, bark
Altitude: 740 m

Folk medicinal uses: Plant leaves effectively cure scorpion sting and bee sting. Ripe fruit is laxative, diuretic and used in bleeding and secretion. Powder of bark is used as toothaches.

Apocynaceae

Species name: *Carissa apaca* stapf-ex-Haines
Status: Shrub
Local name: Granda
Part used: Fruit, leaves
Altitude: 739 m

Folk medicinal uses: Fruit is best for cardiac problems, used as tonic and stimulant. Leaves powder is used for diabetes. Powder of whole plant is vermifuge.

Species name: *Nerium oleander* L.
Status: Shrub
Local name: Gndeer
Part used: Root, leaves
Altitude: 613 m

Folk medicinal uses: The root is bitter in taste, effective for chronic pain, abdominal pain and rheumatism. Oil extract from the root bark used for skin diseases. Branches are used as toothache.

Asclepidaceae

Species name: *Calotropis procera* (Wild.) R.Br.
Status: Shrub
Local name: Akk
Part used: Leaves, roots
Altitude: 725 m

Folk medicinal uses: Leaves used in boils, blisters and skin diseases. Leaf latex is relieving for cough and wounds. Root powdered cures muscular swelling, cough and asthma.

Astraceae

Species name: *Artemisia scoparia* Waldst and Kit.
Status: Shrub
Local name: Chahoo
Part used: Leaves, flowers
Altitude: 675 m

Folk medicinal uses: Leaves and flowering tops are astringent, carminative, aromatic, anodyne, diuretic, emmenagogue, appetizer and febrifuge. It is useful in dyspepsia, flatulence and intestinal worms.

Species name: *Helianthus tuberosus* L.
Status: Herb
Local name: Arvi
Part used: Tubers
Altitude: 723 m

Folk medicinal uses: It is used in epithalamia, inflammation, wounds, ulcer and respiratory diseases. It is best for cough and bronchitis and flu.

Species name: *Launaea procumbens* Roxb.
Status: Herb
Local name: Methi hand
Part used: Leaves, roots
Altitude: 689 m

Folk medicinal uses: Leaves are cooked as vegetables and used against diabetes in cooked form or its powder is

used for this purpose. Root powder is useful in rheumatism and gout. The used preparation is powder.

Species name: *Taraxacum officinale* Weber.
Status: Herb
Local name: Hand
Part used: Leaves, roots
Altitude: 650 m

Folk medicinal uses: The root is diuretic, tonic and slightly aperients. It is chiefly used in kidney and liver disorder. It is given to animals as tonic especially newly born animals.

Species name: *Xanthium strumarium* L.
Status: Herb
Local name: Chota dhatora
Part used: Whole Plant
Locality: Chani
Altitude: 689 m

Folk medicinal uses: The plant is laxative, anthelmintic, improve appetite, effective as toothache especially in children. Decoction of the whole plant is useful in malarious fever. Shinwari and Gilani (2003) has reported similar uses from a nearby area.

Bombacaceae

Species name: *Bombax ceiba* L.
Status: Tree
Local name: Simbal
Part used: Whole plant
Altitude: 609 m

Folk medicinal uses: The roots are sweet, cooling, stimulant, tonic and demulcent, and are used in dysentery. Leaves and flowers are astringent and good for skin troubles. Seeds are useful in treating gonorrhoea.

Boraginaceae

Species name: *Cordia myxa* L.
Status: Tree
Local name: Lasura
Part used: Bark, leaves, fruit
Altitude: 670 m

Folk medicinal uses: The bark is bitter, astringent, constipating, anthelmintic, useful in dyspepsia, fever and skin diseases. Leaves are aphrodisiac. Fruit is useful in ulcer, leprosy and skin diseases.

Species name: *Cynoglossum lanceolatum* Forssk
Status: Herb

Local name: Lunduri
Part used: Leaves, roots
Altitude: 730 m

Folk medicinal uses: Powder of root is used for bronchitis and eruption. Decoction of the leaves is blood purifier and antiseptic and used to cure wound.

Species name: *Trichodesma indicum* (L.) R.Br.
Status: Herb
Local name: Doosi
Part used: Leaves
Altitude: 750 m

Folk medicinal uses: Leaves decoction is used for fever and dysentery. Paste of leaves is applied to reduce swelling particular of the joints.

Brassicaceae

Species name: *Brassica campestris* L.
Status: Herb
Local name: Sarsoon
Part used: Leaves, seeds
Altitude: 687 m

Folk medicinal uses: Essential oil used for strengthening the skin and hair tonic. Leaves are used as vegetable. Decoction of leaves is used as stomachs and has carminative effects. Oil is used to relief ear pain.

Species name: *Lepidium pinnatifidum* Ladeb.
Status: Herb
Local name: Halian
Part used: Leaves, seeds
Altitude: 680 m

Folk medicinal uses: Seeds are used for painful menstruation in women. Leaves are cooked as vegetable. Whole plant is effect in constipation and pile.

Species name: *Raphanus sativus* L.
Status: Herb
Local name: Mooli
Part used: Roots, leaves, seeds
Altitude: 687 m

Folk medicinal uses: Roots are acid, appetizing, digestive, stomachic, anti-inflammatory and anodyne. Leaves and seeds are diuretic, emenagogue and useful in cough, flatulence and dyspepsia.

Cactaceae

Species name: *Opuntia dillenri* Haw

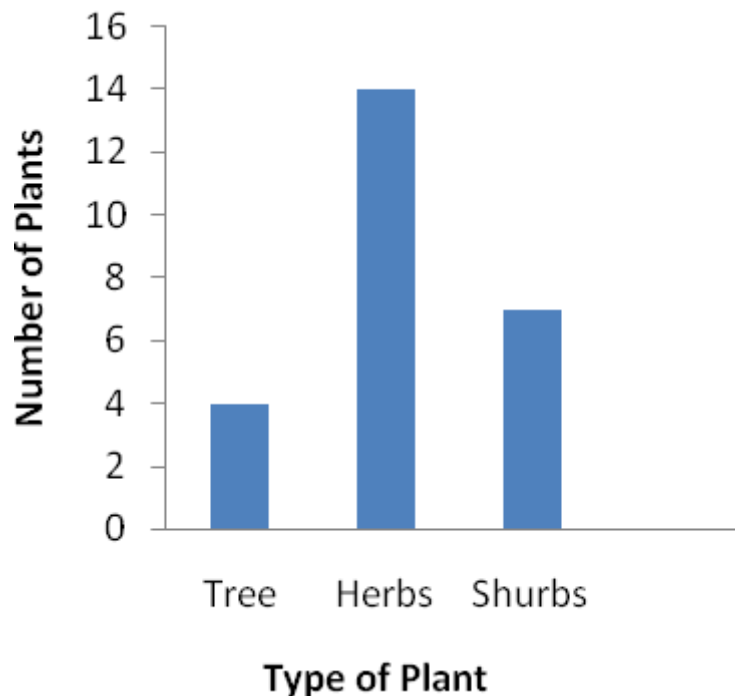


Figure 1. Types of plants used as traditional medicines.

Status: Shrub
Local name: Thor
Part used: Fruit
Altitude: 612 m

Folk medicinal uses: The plant is carminative, diuretic, and cures inflammation. Juice is used to cure earache. Fruit is used as condiment.

Caesalpiniaceae

Species name: *Bauhinia variegata* L.
Status: Tree
Local name: Kalyar
Part used: Bark, flowers
Altitude: 721 m

Folk medicinal uses: Decoction of bark is used for diarrhea and dysentery. Paste of the bark is applied to treat cuts and wounds. Flowers are used as vegetable and have rich protein contents.

Cannabinaceae

Species name: *Cannabis sativa* L.
Status: Herb
Local name: Bhang
Part used: Roots, leaves, seeds

Altitude: 690 m

Folk medicinal uses: Powder of root is used to relieve pyrexia. Leaves extract and oil from seeds is used to cure stomach pain and muscular pain. Seeds and leaves are sedative and narcotics.

DISCUSSION

Present study documented 25 indigenous plant species belonging to the 14 families used by the local communities of the study area. About 137 local inhabitants were interviewed including 73 males, 47 females and 17 Hakims (herbal specialists). Indigenous medicinal plants reported in results are used to cure about 20 types of disorders, which include diabetes, constipation, piles, rheumatism, cold, cough, fever, bronchitis, cardiac problems, liver problems, pyrexia etc. Indigenous plants used as tonic, emollient, diuretic, sedative, narcotic, stomachs, toothaches, vermifuge, laxative, antiseptic agents etc and were documented. Primary source of indigenous medicines were herbs (56%), shrubs (28%) and trees (16%) (Figure 1). Herbal preparations were made by the different plant parts. Most common plant part used to make the herbal preparation was leaf (39%) followed by the root (19%), whole plant (12%), seed (9%), bark (7%), fruit (7%), flower (5%) and tuber (2%) (Figure 2).

Most common plants used against various ailments

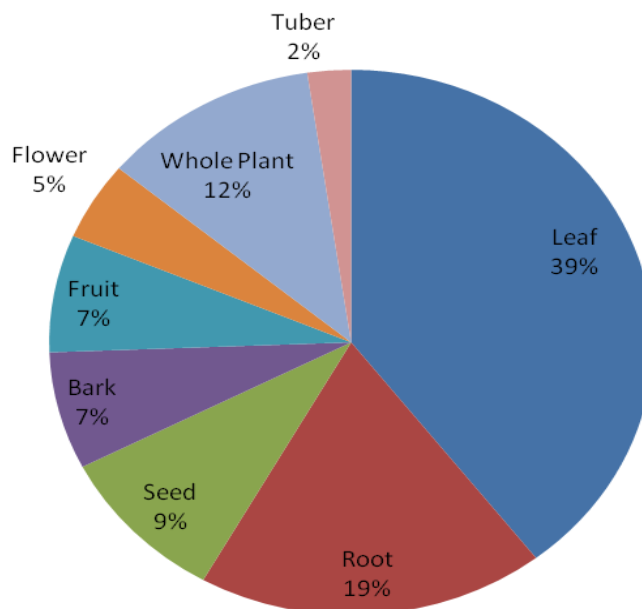


Figure 2. Plant parts used for herbal preparations.

are, *Opuntia dillenri*, *Raphanus sativus*, *Taraxacum officinale* *Mangifera indica* and *Amaranthus viridis* used as diuretic agents, *Cannabis sativa* used as sedative and narcotic agent, *Bauhinia variegata* is used against diarrhea, *Trichodesma indicum* and *Bombax ceiba* are used for dysentery, *Cynoglossum lanceolatum* is a blood purifier plant, *Cordlia myxa* and *Helianthus tuberosus* are best treatment of ulcer, *Launaea procumbens* is commonly used for diabetes, *Carissa apaca* is best treatment of cardiac disorders, *Justicia adhatoda* is the herbal medicine for asthma, cold, cough and flu and *Taraxacum officinale* is used in kidney problems (Shinwari et al., 2009). However, several scientists have been reporting its screening for efficacy etc on one side (Walter et al., 2011) and for its proper identification molecular methods needed to be used (Yousaf et al., 2009), several morphological controversies were resolved through molecular techniques (Shinwari et al., 2011).

Numerous ethno-botanists are trying to explore the traditional knowledge of AJK. Various reports have been published on the medicinal knowledge of plants from AJK including Mahmood et al. (2011b, d), Ajaib et al. (2010), Qureshi et al. (2007), Dar (2003), Saghir et al. (2001), Shahzad and Qureshi (2001) and Shaheen and Shinwari (2012) and these are increasing day by day. The present research worked showed that the Kotli district is diverse with the medicinal plants knowledge. People are still reliant on traditional knowledge to fulfill their basic healthcare needs (Yousaf et al., 2010). Old people are more aware to this treasure compared with the youth. So, it is a dare need to preserve this valuable treasure. This research work was also aimed to document this

knowledge. It is suggested that the indigenous medicinal plants having more potential as traditional plants should be screened further by pharmacologist to explore their active compounds. It will help to synthesize more new potential drugs. Because of unsustainable utilization of medicinal plants, we have to focus on not only molecular studies of important species (Jan et al., 2011; Shinwari and Shinwari, 2010), but also must try *ex situ* conservation (Hussain et al., 2011a). We may also do value addition to the indigenous knowledge by extracting valuable products from these species (Jan et al., 2011a, b; Shinwari, 2010).

REFERENCES

- Alcorn JB (1984). Development policy forests and peasant farms: reflection on Huastec-managed forests contributions to commercial production and resource conservation. *Econ. Bot.* 38(4):389-406.
- Altieri MA, Merick LC (1987). In situ conservation of crop genetic resources through maintenance of traditional farming system. *Econ. Bot.* 4(1):86-96.
- Aumeeruddy Y (1994). Representations et gestion paysannes des agroforeis en kperipherie du Pare National Kerinci Seblat a Sumatra, Indonesie, People and Plants working paper no. 3, UNESCO, Paris.
- Bartran T (1995). *Encyclopedia of Herbal medicine*. Grace, Dorset.
- Cunningham AB (2001). *Applied ethnobotany: people, wild plant use and conservation*. People and Plants Conservation Series, Earthscan, London.
- Dar MEI (2003). Ethnobotanical uses of plants of Lawat District Muzaffarabad, Azad Jammu and Kashmir. *Asian J. Plant Sci.* 2:680-682.
- Gilani SA, Kikuchi A, Shinwari ZK, Khattak ZI, Watanabe WN (2007). Phytochemical, pharmacological, and ethnobotanical studies of *Rhazya stricta* Decne. *Phytother. Res.* 21:301-307.
- Gilani SA, Fujii Y, Shinwari ZK, Adnan M, Kikuchi A, Watanabe KN (2010). Phytotoxic studies of medicinal plant species of Pakistan. *Pak. J. Bot.* 42(2):987-996.

- Gilani SA, Fujii Y, Kikuchi A, Shinwari ZK, Watanabe KN (2011). Ecological Consequences, Genetic and Chemical Variations in Fragmented Populations of a Medicinal Plant, *Justicia adhatoda* and Implications for its Conservation. *Pak. J. Bot.* 43(Special Issue):29-37.
- Jan HU, Rabbani MA, Shinwari ZK (2011). Assessment of genetic diversity of indigenous turmeric (*Curcuma longa* L.) germplasm from Pakistan using RAPD markers. *J. Med. Plants Res.* 5(5):823-830.
- Jan HU, Shinwari ZK, Khan (2011a). Staining Effect Of Dye Extracted From Dry Leaves Of *Lawsonia Inermis* Linn. (Henna) On Angiospermic Stem Tissue. *Pak. J. Bot.* 43(1):383-389.
- Jan HU, Shinwari ZK, Marwat KB (2011b). Influence Of Herbal Dye Extracted From Dry Wood Of Indigenous *Berberis Petiolaris* Wall. In Plant Histological Staining. *Pak. J. Bot.* 43(5):2597-2600.
- Martin G (1995). *Ethnobotany. A Method Manual.* Chapman and Hall, London.
- Mahmood A, Mahmood A, Tabassum A (2011a). Ethnomedicinal survey of plants from District Sialkot, Pakistan. *J. Appl. Pharm.* 02(03):212-220.
- Mahmood A, Mahmood A, Shaheen H, Qureshi RA, Sangi Y, Gilani SA (2011b). Ethno-medicinal survey of plants from district Bhimber Azad Jammu and Kashmir, Pakistan. *J. Med. Plants Res.* 5(11):2348-2360.
- Mahmood A, Mahmood A, Shaheen H, Qureshi RA, Sangi Y, Gilani SA (2011c). Ethno medicinal survey of plants from district Bhimber Azad Jammu and Kashmir, Pakistan. *J. Med. Plants Res.* 5(11):2348-2360.
- Mahmood A, Malik RN, Shinwari ZK, Mahmood A (2011d). Ethnobotanical survey of plants from Nellum Valley, Azad Jammu and Kashmir, Pakistan. *Pak. J. Bot.* 43:105-110.
- Pei SJ, Sajise P (1995). *Regional study on biodiversity: concepts, frameworks and methods.* Yunnan University Press, China.(provide page number).
- Qasim M, Gulzar S, Shinwari ZK, Aziz I, Khan MA (2010). Traditional Ethnobotanical Uses of Halophytes from Hub, Balochistan. *Pak. J. Bot.* 42(3):1543-1551.
- Qureshi RA, Ghufuran MA, Gilani SA (2007). Ethnobotanical studies of selected medicinal plants of Sudhan Gali and Ganga Chotti Hills, district Bagh, Azad Kashmir. *Pak. J. Bot.* 39:2275-2283.
- Saghir IA, Awan AA, Majid S, Khan MA, Qureshi SJ (2001). Ethnobotanical studies of Chikar and its allied area of District Muzaffarabad. *Online J. Biol. Sci.* 1:1165-1170.
- Shaheen H, Shinwari ZK (2012). Phyto diversity and Endemic richness of Karambar Lake Vegetation from Chitral, Hindukush- Himalayas. *Pak. J. Bot.* 44(1):17-21.
- Shaheen H, Shinwari ZK, Qureshi RA, Ullah Z (2012). Indigenous Plant Resources and their Utilization Practices in Village Populations of Kashmir Himalayas. *Pak. J. Bot.* 44(2):739-745.
- Shinwari ZK, Gilani S (2003). Sustainable harvest of medicinal plants at Bulashbar Nullah, Astore (Northern Pakistan). *J. Ethnopharmacol.* 84(2003):289-298.
- Shinwari ZK, Khan I, Naz S, Hussain A (2009). Assessment of antibacterial activity of three plants used in Pakistan to cure respiratory diseases. *Afr. J. Biotechnol.* 8(24):7082-7086.
- Shinwari ZK, Shinwari S (2010). Molecular Data And Phylogeny Of Family Smilacaceae. *Pak. J. Bot., Special Issue (S.I. Ali Festschrift),* 42:111-116.
- Shinwari ZK (2010). Medicinal Plants Research in Pakistan. *J. Med. Plants Res.* 4(3): 161-176.
- Shinwari ZK, Sultan S, Mehmood T (2011). Molecular and Morphological Characterization of Selected *Mentha* Species. *Pak. J. Bot.* 43(3):1433-1436.
- Shinwari ZK, Qaisar M (2011). Efforts On Conservation And Sustainable Use Of Medicinal Plants Of Pakistan. *Pak. J. Bot.* 43(Special Issue):5-10.
- Walter C, Shinwari ZK, Afzal I, Malik RN (2011). Antibacterial Activity in Herbal Products Used in Pakistan. *Pak. J. Bot.* 43(Special Issue):155-162.
- Yousaf Z, Khan MA, Shinwari ZK (2009). A new variety of *Solanum surattense* Burm. From Pakistan. *Pak. J. Bot.* 41(6):2097-2103.
- Yousaf Z, Shinwari ZK, Khan MA (2010). Phenetic Analysis of Medicinally Important Species Of The Genus *Solanum* From Pakistan. *Pak. J. Bot.* 42(3):1827-1833.