Indian Journal of Natural Products and Resources
Vol. 5 (3), September 2014, pp. 273-277

Medicinal plants of Koont research farm, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan

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Received 03 January 2013; Accepted 03 March 2014

The present study was aimed to collect information on medicinal plants used by the people of Koont village around University research farm and its surrounding areas located on Chakwal road, Punjab, Pakistan. For this purpose, field trips were arranged and the study area was surveyed during August 2008 to July 2009 to collect traditional use of plants by using open-ended and structured questionnaires. Forty three species belonging to 35 genera and 21 families have been identified which are being used by the natives for treating 27 different ailments. Joint pains and injuries were more prevalent complaints in the area, hence most of the species (9.09 %) were utilized for the same, followed by wounds, fever, toothache, as tonic (6.82 % each), boils, skin diseases, constipation, piles, jaundice and cough (4.55 % each). Leaves were the most commonly utilized part (27.03 %) for preparing indigenous recipes followed by the whole plant (16.22 %), roots, seeds, fruits (10.81 % each) and latex, gums (exudates) (8.11 % each). Fourteen plant species possessed novel use in addition to previous knowledge. Based on this study, phytochemical and pharmacological screening is suggested for the novel use in order to validate their authenticity.

Keywords: Medicinal plants, Koont research farm, Open-ended questionnaire, Indigenous recipes, Novel use.

IPC code; Int. cl. (2014.01)–A61K 36/00

Introduction

Medicinal plants provide basic healthcare to rural households and form the basis for a rapidly growing pharmaceutical and cosmetic industry. Almost all ancient civilization has utilized medicinal plants for the treatment of human diseases[1]. In recent years, there has been tremendous interest in the usage of medicinal plants in traditional systems of medicine. Drugs obtained from plants are believed to be much safer and exhibit a remarkable efficacy in the treatment of various ailments[2]. The folk medicinal traditions play a reflecting and prominent role in human and environment interaction[3]. Knowledge of the medicinal values of plants is recognized by almost every society. In early 1950's, it was estimated that 84% of the population of Pakistan was dependent on traditional medicines for all or most of their medicinal uses[4].

Globally, about 85% of the traditional medicines used for primary healthcare are derived from plants. Herbal drugs obtained from plants are believed to be much safer; this has been proved in the treatment of various ailments[5]. Traditional medicine and ethnobotanical information play an important role in scientific research, particularly when the literature and field work data have been properly evaluated[6].

Today, ethnobotany is widely accepted as science of human interactions with plants and its ecosystem. It is also devoted to understand the limitation and behavioral consequences of human population's action on their environment[7]. Worldwide this field is well recognized and a lot of work has been done on discovering ethnobotany of various areas[8-17]. In Pakistan, this field is quite popular and a number of studies have been undertaken from different parts of the country[18-37].

The study area has not been explored ethnobotanically and nothing has been published on medicinal plants; however a floristic survey was carried out in which 130 plant species have been reported from this area[38].

Materials and Methods

Field trips were arranged to collect information about medicinal plants and their usage from the study area during August 2008 to July 2009. For this purpose a semi-structured questionnaire was designed

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Table 1—List of ethnobotanically important species found in University research Farm (Koont), Pakistan

S. No.	Species	Family	Common name	Parts used/ preparation	Used for (ailment)	Taxa status
1.	*Adiantum capillus-veneris* L.	Adiantaceae	Persiaon shan	Dried fronds	Fever	Uncommon
2.	*Trianthema portulacastrum* L.	Aizoaceae	Itsit	Roots/necklace	Jaundice	Rare
3.	*Aerva javanica* Brum.f.	Amaranthaceae	Boi	Seed/paste	Pimples	Common
4.	*Amaranthus hybridus* L.	-Do-	Choleri	Leaves/potherb	Constipation	Rare
5.	*Amaranthus viridis* L.	-Do-	Cholahi	Leaves/potherb	Constipation	Common
6.	*Digera muricata* (L.) Mart.	-Do-	Tanga	Flowers and seeds/juice	Urinary disorders	Common
7.	*Calotropis procera* (Willd.) R. Br.	Asclepiadaceae	Akh	Milky latex	Snakebite	Common
8.	*Cichorium intybus* L.	Asteraceae	Kasni	Whole plant/Syrup	Jaundice and cooling agent	Uncommon
9.	*Echinops echinatus* Roxb.	-Do-	Unt katara	Root/powder	Tonic	Common
10.	*Eclipta prostrata* L.	-Do-	Bhangra	Whole plant/extract	Toothache	Common
11.	*Taraxacum officinale* F. H. Wiggers	-Do-	Dodak	Leaves and roots/potherb	Liver complaints	Very common
12.	*Heliotropium europaeum* L.	Boraginaceae	Hathi sunda	Whole plant/paste	Wounds	Very common
13.	*Trichodesma indicum* (L.) R. Br.	-Do-	Hindusi	Whole plant/juice	Eye inflammation	Very common
14.	*Sisymbrium irio* L.	Brassicaceae	Khoob Kalan	Seeds/decoction	Fever	Common
15.	*Cannabis sativa* L.	Cannabinaceae	Bhang	Whole plant/juice	Cooling and narcotic agent	Common
16.	*Chenopodium album* L.	Chenopodiaceae	Bathoo	Leaves/potherb	Constipation and piles	Very common
17.	*Chenopodium ficifolium* Sm.	-Do-	Bathoo	Leaves/potherb	Piles	Common
18.	*Convolvulus arvensis* L.	Convolvolaceae	Hirran khuri	Leaves/potherb	Abdominal worms	Common
19.	*Cyperus rotundus* L.	Cyperaceae	Daila	Tubers/paste	Dandruff	Common
20.	*Euphorbia helioscopia* L.	Euphorbiaceae	Chatri dodhak	Latex	Joints pain	Common
21.	*Ricinus communis* L.	-Do-	Arind	Castor oil	Constipation	Very common
22.	*Fumaria indica* (Hausskn.) Pugsley	Fumariaceae	Shatra papra	Whole plant	Blood purification	Common
23.	*Acacia modesta* Wall.	Mimosaceae	Phulai	Gum	Tonic	Common
24.	*A. nilotica* (L.) Delile	-Do-	Desi kikar	Leaves/decoction	Diarrhoea	Common
25.	*Prosopis juliflora* Sw.	-Do-	Jangli kikar	Gum	Tonic	Less common
26.	*Ficus bengalensis* L.	Moraceae	Peepal	Ripened fruit (powder)/latex	Spermatorrhoea	Common
27.	*F. carica* L.	-Do-	Injeer	Fruit	Tonic, piles	Uncommon
28.	*Oxalis corniculata* L.	Oxalidaceae	Khatti buti	Whole plant/Juice	Skin diseases, dysentery	Very common
29.	*Cymbopogon jwarancusa* (Jones) Schult.	Poaceae	Khawi	Leaves/decoction	Digestion	Rare
30.	*Desmostachea bipinnata* (L.) Stapf.	-Do-	Dabh	Roots/ash	Arthritis	Common
31.	*Rumex dentatus* L.	Polygonaceae	Jangali palak	Leaves/potherb	Constipation	Common
32.	*Ziziphus mauritiana* Lam.	Rhamnaceae	Bair	Bark (powder)/fruit	stop bleeding/tonic	Common
33.	Z. nummularia (Burm.f.) Wight & Arn.	-Do-	Jhar bairi	Fruit	Tonic	Common
34.	*Datura innoxia* Mill.	Solanaceae	Dhatura	Leaves /paste	Boils	Common
35.	*Solanum incanum* L.	-Do-	Mahokari	Fruit pulp/potherb	Throat inflammation and “Wibadi” (watering of mouth)	Uncommon
36.	*S. nigrum* L.	-Do-	Mako	Leaves (juice)/fruit (potherb)	Cough and fever/ stomach diseases and abdominal pain	Common

(*contd.*)

Table 1—List of ethnobotanically important species found in University research Farm (Koont), Pakistan

S. No.	Species	Family	Common name	Parts used/ preparation	Used for (ailment)	Taxa status
37.	*S. surattense* Burm.f.	-Do-	Choti mahokari	Leaves, berries (poultice)/Fruit (Juice)	Pain, cough/ toothache and on broken organ	Very common
38.	*S. villosum* Mill.	-Do-	Kach Mach	Ripened fruits/chatni	Internal swellings	Very common
39.	*Withania somnifera* (L.) Dunal	-Do-	Asghand	Roots/paste, powder/ash	painful swellings, rheumatic pain, tonic, asthma	Common
40.	*Urtica dioica* L.	Urticaceae	Bichho boti	Leaves	poisonous and causing skin rashes	Very common
41.	*Fagonia indica* Burm. f.	Zygophyllaceae	Dhamasa	Whole plant/paste	Skin eruption	Uncommon
42.	*Pegnum harmala* L.	-Do-	Harmal	Seeds/oil	Pain and toothache	Common
43.	*Tribulus terrestris* L.	-Do-	Bhakra	Leaves/ paste	Wounds and boils	Common

to record ethnobotanical information from the inhabitants of the area. Plant specimens were collected during the survey for authentication and recorded. The collected specimens were identified with the help of published literature[39-40]. Identified specimens were deposited in the Department of Botany, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi.

Results

A total of 43 plant species belonging to 35 genera and 21 families have been identified which are being used for the treatment of 27 different types of ailments. A list of alphabetically arranged plants (Table 1) has been appended along with their family, scientific/local name, flowering period, parts used, occurrence and medicinal uses of the flora of University research Farm (Koont).

Discussion

Forty three medicinal plant species are reported to be used in treating 27 different diseases. Joint pains and injuries are more prevalent complaints in the area, hence most of the species like *Euphorbia helioscopia*, *Solanum surattense*, *Withania somnifera*, *Desmostachya bipinnata*, etc. are utilized for joint pains/pain (9.09%), followed by wounds, fever, toothache, tonic (6.82% each), boils, skin diseases, constipation, piles, jaundice and cough (4.55% each). The other ailments treated by different species are cough, cold, asthma, abdominal worms, eye inflammation, etc. Leaves are highly utilized part (27.78%) for the preparation of recipes, followed by whole plant (16.67%), root, seeds, fruits (11.11% each), latex (8.33%), and gums (5.56%). Various other studies also reported similar type of results[14, 16, 17, 31, 33, 42-43].

The present findings are in agreement of the work carried out by Qureshi *et al*[34], who reported 29 plant species belonging to 25 genera and 18 families which had been found useful by the local people of Tehsil Chakwal for curing various human diseases. Their work support present findings in addition to some more knowledge about the medicinal plants from this area. Comparing with previous literature, most of the plant species were earlier described with reference to their medicinal properties and uses[1, 7, 18, 20, 22, 25, 33, 36, 44-60]. However, 14 species like *Calotropis procera*, *Cichorium intybus*, *Ficus bengalensis*, *F. carica*, *Fumaria indica*, *Peganum harmala*, *Prosopis juliflora*, *Sisymbrium irio*, *Solanum surattense*, *Trichodesma indicum*, *Tribulus terrestris*, *Ziziphus mauritiana*, *Cyperus rotundus* and *Desmostachya bipinnata* found having new uses in addition to previous known. Besides, the method of preparation is novel reported from the study area.

Conclusion

This ethnobotanical survey of the Koont village and its surroundings revealed that the people of the area possess good knowledge of plants to meet their health need. They are however in constant exposure to modernization and it is threat that their knowledge regarding medicinal uses of plants would be lost in due course of time. Keeping in view, present study investigated indigenous uses of plants that may be used by pharmacologists in screening species for the treatment of various diseases. On the other hand, the overuse of plants is a threat to the native flora that may lead to the loss of some valuable species in the area. Therefore, efforts are required to conserve these valuable plants for future generations.

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