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Ethno-medicinal Approaches in the Identification of Useful Halophytic Flora of District Mardan, Pakistan

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Abstract: The present study documented the folk remedies of medicinal halophytes among the people of District Mardan (altitude of 400 to 1,700 m.a.s.l in 34°05' to 34°32 North latitudes and 71°48' to 72°25 East longitudes) Khyber Pakhtoon-Khwa (K.P.K), Pakistan. The varied climatic conditions in the area have resulted in a rich diversity of flora including some halophytic species. Ethnomedicinal data was collected from key informants in randomly selected villages through questionnaire. Thirty one halophytic species belonging to 14 families has been documented as medicinal flora of the area. Chenopodiaceae (with 8 species) was recorded the dominant family followed by Solanaceae and Asteraceae with 4 species each. Some of the species reported has been used as blood purifier, painkiller and laxative. Some species has been used against asthma and ulcer whereas; *Suaeda fruticosa* and *Salicornia verginica* have been used in soap industry. The area was investigated for the first time and information about the traditional remedies were collected and documented. Due to modern agricultural practices, construction schemes and cultural changes, the use of medicinal plant species as folk remedies are threatened day by day in the area. The cultivation and conservation of such natural resources may result in sustainable maintenance and utilization of these plants wealth and uplift the socio-economic status of the people.

Key words: Medicinal halophytes · Conservation · Mardan

INTRODUCTION

Presented research investigated the use of folk remedies among the people of District Mardan, Pakistan. During the ethnobotanical survey, 31 halophytic medicinal plant species has been documented and collected through questionnaire, ethnomedicinal data was collected from key informants and local inhabitants of the area. Ethnobotany studies the relationship between a certain society and its environment and in particular the plant world [1]. Human behavior has a direct impact on the plant communities whereas, plants themselves also impose limitations on human and these mixture interactions are the main focus of ethnobotany [2]. Even now a day's most of the population of the country is still depend on the folklore medicines as they live in far flung areas where the facilities of the medical treatment are scarcely available. In view of the wide spread usage of medicinal plants in Unani, Greeco-Arabic systems, it seems worth while to carry out a study on the medicinal flora of Pakistan and particularly on halophytes and define the important and persistent usage of these remedies in different countries. Ethnobotanical studies in various areas of Pakistan have also been carried out [3-7] including those of the northern mountainous regions [8] which comprise a considerable number of halophytes. Owing to construction of new housing colonies, modern farming practices and cultural changes within the community, the use of traditional knowledge and medicinal plant species are threatened day by day in the area. All the circumstance resulted breakdown of the intergenerational shift of information on the identification and use of medicinal plants. This indigenous knowledge has been conserved through the documentation of folk remedies using plants. This study will provide help in future conservation strategies.

Study Area: The district Mardan lies in the Khyber Pakhtoon-Khwa (K.P.K) Province, between an altitude of 400 to 1,700 m.a.s.l in 34°05' to 34°32' North latitudes and 71°48' to 72°25' East longitudes. The total area of the district is 1632 km^2. The soil of the area possesses high

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salinity; the color of soil is dark red due to high salt concentration. Each plant collected with three replicates along with rhizospheric soil samples. Soil has high pH of 8.3-9.3 and high electrical conductivity of 4.2dS/m.

Objectives of Study: This ethnobotanical research, highlighting ethnomedicine, was conducted in the year 2010 with the aim of exploring, investigating, collecting, identifying and documenting medicinal flora of Katlang, District Mardan, KPK, Pakistan. This study was important because urbanization, construction of road, dam and buildings and changes in cultural practices were rapidly exhausting natural plant resources and traditional knowledge. However, the specific objectives of the study were:

- Documentation of indigenous knowledge related to medicinal plant species utilizing by the inhabitants of the area.
- Documentation of the cure of human diseases using traditional plant remedies including methods of preparation and mode of administration.

MATERIALS AND METHODS

Collection of Ethnobotanical Data: Thirty One medicinal halophytes described in the present study were collected in 2010-2011 from District Mardan KPK, Pakistan. Information on demographic (age, gender) and ethnobotany information was gathered from each site by using a semi-structured questionnaire. During survey personal observation was also recorded. Information about the local uses of the species as medicinal, fuel wood, timber and fodder etc. were obtained through random sampling by interviewing 40 respondents from different walks of life because different age group and gender use these plant for different purposes. The outcome of the results were rechecked and compared with literature like that of [9, 10].

Preservation and Identification of Plants: The plants were collected, dried and preserved on Herbarium sheets for identification. Plants were identified with the help of Flora of Pakistan [11, 12]. The identification was further confirmed by Dr. Mushtaq Ahmad and Dr. Rizwana Aleem Qureshi at Quaid-i-Azam University, Islamabad.

RESULTS

All the inhabitants have used medicinal plants for their primary healthcare needs to cure different types of diseases. These plants have different growth habits which include herbs, shrubs and trees whereas, most of these plants are wild but some are cultivated in the area.

The present study included indigenous knowledge of 31 species of halophytes belonging to 14 families collected from district Mardan. The people of the District living in urban areas are generally ignorant about the medicinal and economic importance of these plants while those who dwell in the hilly areas have knowledge about the medicinal halophytes. The dominant families are Chenopodiaceae with 8 species, followed by Solanaceae and Asteraceae with 4 species each. These medicinal halophytes are used as blood purifier (27%), painkiller

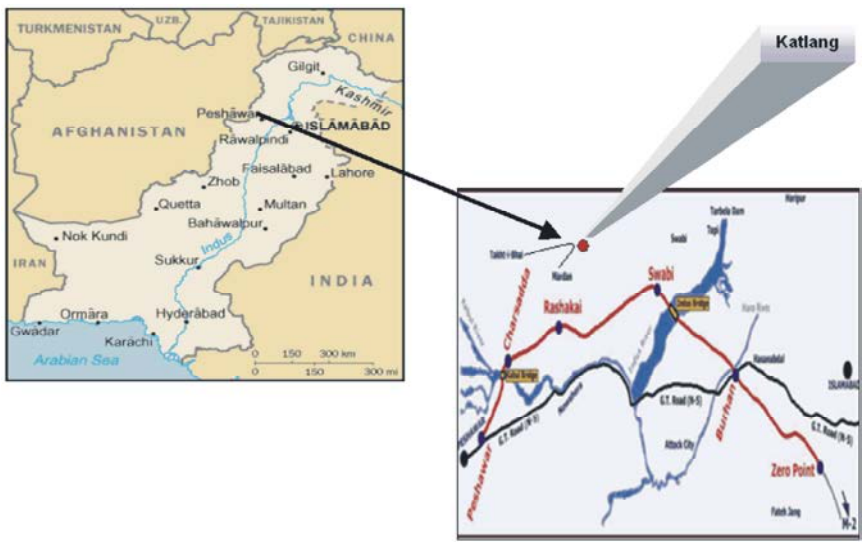

Fig. 1: Map indicating the area of collection

Table 1: Economically important halophytic medicinal plants of Katlang, District Mardan

S/N	Botanical Name	Vernacular name	Family	Habit	Uses
1	*Acacia modesta*	Wall Palosa	*Mimosaceae*	Tree	EMO, EMU
2	*Acacia nilotica (Linn.)*	Delile Kiker	*Mimosaceae*	Tree	D, T
3	*Zizyphus maurtiana Lam*	Bare	*Rhamnaceae*	Tree	FOD
4	*Calotropis procera (Willd.)*	Spalmi	*Asclepiadaceae*	Shrub	P, SU, F
5	*Periploca aphylla Dcne.*	Barara	*Asclepiadaceae*	Shrub	SJ, C, FL
6	*Rhazya stricta Dcne.*	Ganderi	*Apocynaceae*	Shrub	CA, SR, BP, SE
7	*Withania coagulans*	Dunal Shopyanga	*Solanaceae*	Shrub	SU, SR, BP
8	*Zizyphus nummularia (Burm. f.)*	Kerkana	*Rhamnaceae*	Shrub	FOD, HP, BH
9	*Withania somnifera L.*	Kotilal	*Solanaceae*	Shrub	L
10	*Carthamus oxycanthas M.B.*	Karezay	*Asteraceae*	Shrub	SOE, T, CA
11	*Datura stramonium L.*	Daltoora	*Solanaceae*	Shrub	P
12	*Suaeda fruticosa Forssk*	Alkali blite	*Chenopodiaceae*	Shrub	FOD, S
13	*Salicornica verginica*	Glasswort	*Chenopodiaceae*	Shrub	BC
14	*Haloxylon salicornicum*	Rimth	*Chenopodiaceae*	Shrub	FOD
15	*Atriplex leucoclada Boiss*	Saltbush	*Chenopodiaceae*	Shrub	FOD
16	*Lespedeza bicolor*	Bush clovers	*Fabaceae*	Shrub	OR, FO
17	*Salsola soda*	Saltwort	*Chenopodiaceae*	Shrub	FOD, S
18	*Kochia indica*	Qurashka	*Chenopodiaceae*	Shrub	FU, FOD
19	*Asparagus capitatus*	Baker beta	*Liliaceae*	Herb	CG, IN
20	*Blumea lacera (Burm.f.)DC.*	Beta	*Asteraceae*	Herb	D
21	*Chenopodium murale Linn.*	Tor Soba	*Chenopodiaceae*	Herb	DE, FOD
22	*Cynodon dactylon (Linn.)*	Barawa	*Poaceae*	Herb	FOD, DI, FU
23	*Fagonia cretica Linn*	Aspalagzia	*Zygophyllaceae*	Herb	L, CON, BP
24	*Gnaphalium luteo-album Linn.*	Tetesi gul	*Asteraceae*	Herb	AS
25	*Medicago polymorpha Linn*	Karushka	*Papilionaceae*	Herb	FOD, FO
26	*Solanum surratens Burm. f.*	Zyara marana	*Solanaceae*	Herb	L,FOD, REU
27	*Peganum harmala Linn.*	Sponda	*Zygophyllaceae*	Herb	T, A, BP, P
28	*Plantago psyllium Linn.*	Beta	*Plantaginaceae*	Herb	DY
29	*Stipa capensis Thunb.*	Her beta	*Poaceae*	Herb	PO
30	*Suaeda monoica Forssk.*	Babara	*Chenopodiaceae*	Herb	OP
31	*Verbescum thapsus L.*	Kharghwag	*Scrophulariaceae*	Herb	A, P (seed)

EMO=Emollient, EMU = Emulcent, D=Diarrhea, T= Tonic, FOD= Fodder, P= Painkiller, SU= Stomach ulcer, F= Fever, SJ= Swollen Joints, C= Cough, FL= Flu, CA= Cooling agent, SR= Skin rashes, BP= blood purifier, SE= Sore eyes, HP= Hedge plant, L= laxative, BH= bird hunting, SOE= Seed oily and edible, PO= poisonous, S= Soap, BC= Biofuel crop, OR= Ornamental, FO= Forage, FU= Fuel, CG= Chronic gout, IN= Insomnia, D= Disinfectant, DE= Decoction, DI= Diuretic, CON= Constipation, AS= Astringent, REU= Rheumatism, A= Asthma, DY= Dysentery, OP= Ophthalmia.

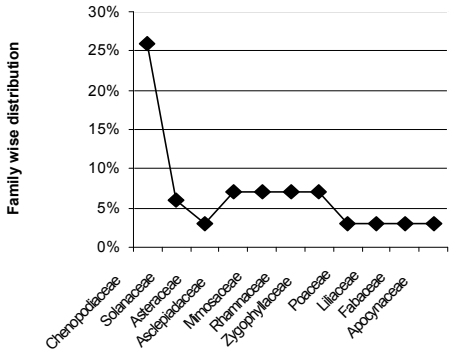

Fig. 2: Family wise distribution of halophytic medicinal plants.

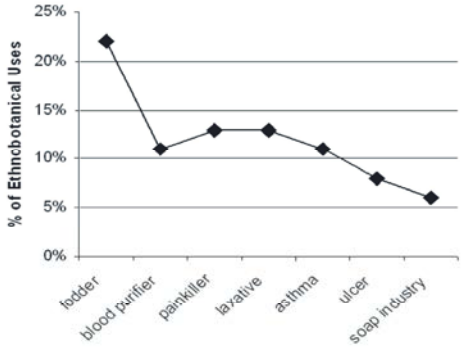

Fig. 3: Distribution of halophytic medicinal plants on the basis ethnobotanical uses.

(13%) and laxative (13%), against asthma 11% and for ulcer 08%. About 22% species used as fodder and 06% used in soap industry. Analysis of the diversity indicated multiple ethnobotanical usages of single species. About 50% of the plants have multiple uses, for example *Zizyphus maurtiana, Rhazya stricta* Dcne, *Withania coagulans, Carthamus oxycanthas, Suaeda fruticosa* Forssk, *Salicornia verginica* and *Lespedeza bicolor.* The ethnobotanical inventory is presented in Table 1. Family wise distribution of halophytic medicinal plants was presented in Fig. 2 whereas; distribution of halophytic medicinal plants on the basis ethnobotanical uses has been shown in Fig. 3.

DISCUSSION

[13] Has reported the knowledge used by the local people in Mato Grosso, Brazil whereas, [14] investigated ethnobotanical findings related to the Maasai community of Southern Kaijiado District of Kenya. Use of plants in the curing different medical problems by local population in the study area was passing down from generation to generation but rapid modernization is causing old traditions to vanish. [4] described the folk use of medicinal plants in Margallah Hills National Park, Islamabad, similarly [15] reported some economically important plants of Pakistan where few of these plants still exist as wild species in the area. These medicinal halophytes are used to cure about 30 to 35 types of diseases. About 27% species has been used as blood purifier, 13% species are Painkiller, 13% are laxative whereas 22% species specially used as fodder. 11% species in the remaining has been used against asthma, 08% species against ulcer while, 06% species (*Suaeda fruticosa* and *Salicornia verginica*) have been used in soap industry. Many of the plants identified in this study are widely used as herbal medicine and marketed internationally. Scientists are actively engaged in exploring plants that have important medicinal properties such as anti-ulcer, anti-diabetes, antioxidant and anti-inflammatory. Scientists often experiment with plants which have been described in previous ethnopharmacological investigations. [16] Studied the socioeconomic relations between people and vegetation and concluded that modernization is not only damaging natural resources but also impacting the quality of life for many people. In spite of all these factors, one major issue is the loss of local knowledge which may serve as a guideline for many scientists all over the world as they continue to research on plant-based therapeutics. People are practicing traditional medicine based on what they currently understand about the system and there is no guarantee that people will use this knowledge in the future even in far-flung areas. Many plant species have become threatened due to habitat loss as a result of rapid urbanization. So, the present result can be incorporated into future conservation management plans for threatened medicinal plants whereas, local people should participate in problem formulation and decision making process. The knowledge of the utilization of natural resources is going to be lost because of the interference of modern cultural changes. It is therefore, important to document the native uses and indigenous knowledge of these plants before the information is lost. The present study being a first ever pioneer attempt to understand and document indigenous knowledge in district Mardan. There is a need to further explore and understand the system through more systematic and elaborate surveys. During the research project it was noted that the medicinal plant wealth of the area not fully exploited. So, the area needs proper protection for the conservation and survival bio-resources. The medicinal plants can be protected by the conservation program by the help of local people.

CONCLUSIONS

The investigated area has a rich diversity of medicinal halophytes and provides conducive habitat and ideal conditions for their growth. It is suggested that local people should be encouraged to use the knowledge of their indigenous medicinal halophytes because of the shortage of trained manpower, resources and the health authorities in Pakistan are not able to provide services to greater part of the rural population. Such studies may also provide some information to biochemist and pharmacologist in screening of individual species and in rapid assessing of phytochemical constituent and bioanalysis for authentic treatment of various diseases. It was concluded from this study that a nationwide survey of medicinal flora should be conducted to investigate and update the inventory of existing natural plants resources of the area specially and generally throughout the Pakistan.

REFERENCES

1. Aumeeruddin, Y., 1996. Ethnobotany, Linkages with conservation and development. Proceedings of First training workshop on “Ethnobotany and its application to conservation” NARC, Islamabad, pp: 152-157.
2. Shinwari, Z.K., 2010. Medicinal plants research in Pakistan. J. Med. Pl Res., 4: 161-176.
3. Shinwari, M.I. and M.A. Khan, 2000. Folk use of medicinal herbs of Margalla Hills National Park, Islamabad. J. Ethnopharmacol., 69: 45-56.
4. Shinwari, Z.K. and S.S. Gilani, 2003. Sustainable harvest of medicinal plants at Bulashbar Nullah, Astore (Northern Pakistan). J. Ethnopharmacol., 84: 289-298.
5. Pei, S., 1995. Ethnobotany and sustainable Use of Plant Resource in the HKH Mountain Region. Planning Workshop on Ethnobotany and its Application to Conservation and Community Development in the Hindu Kush Himalayan (HKH) Region, Nepal. Punjab, Pakistan. Biol. Conser, 63(3): 205-210.

6. Hussain, F., L. Badshah and G. Dastigar, 2006. Folk medicinal uses of some plants of South Waziristan, Pakistan. Pak. J. Pl. Sci., 12: 27-40.
7. Qureshi, R. and G.R. Bhatti, 2008. Ethnobotany of plants used by the Thari people of Nara Desert, Pakistan. Fitoterapia., 79: 468-473.
8. Adnan, M., J. Hussain, M.T. Shah, F. Ullah, Z.K. Shinwari, A. Bahadar and A.L. Khan, 2010. Proximate and nutrient composition of medicinal plants of humid and sub-humid regions in northwest Pakistan. J. Med. Pl. Res., 4: 339-345.
9. Ali, A. and J.L. Fefevre, 1996. Indigenous knowledge of plants. A case study in Chitral, Proceeding of Ethnobotany Workshop, September 124, NARC, Islamabad., pp: 136-151.
10. Khalid, S., 1995. Plants in danger. Fifth National Conference of Plant Scientist, March, 28-30, NARC, Islamabad.
11. Nasir, E. and S.I. Ali, 1971-95. Flora of West Pakistan Department of Botany, University of Karachi, Karachi.
12. Ali, S.I. and M. Qaiser, 1995-2005. Flora of Pakistan. Botany Department. University of Karachi, Karachi.
13. Emmerich, M. and L.D.S. Valle, 1991. Ethnobotanical Studies in Praque Indigena Do Xingu: VII: Abortive, contra ceptive, conceptive and sex-determinant plants. Bradea, 6(2): 12-22.
14. Kiringe, J.W., 2006. A Survey of Traditional Health Remedies Used by the Maasai of Southern Kaijiado District, Kenya. Ethnobotany Research & Applications, 4: 61-73.
15. Haq, I., 1983. Medicinal Plants: Report of Committee on Economic and Therapeutic Importance of Medicinal Plants. Ministry of Health, Government of Pakistan. Hamdard Foundation Press, Karachi, Pakistan.
16. Mennis, J., 2006. Socioeconomic-vegetation Relationships in Urban, Residential Land: The Case of Denver, Colorado. Photogrammetric Engineering and Remote Sensing, 72(8): 911-921.