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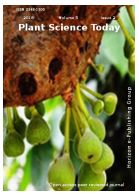

Research Communication

Ethnobotanical survey of the flora of Maidan Valley, Lower Dir District, Khyber Pakhtunkhwa Province, Pakistan

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Abstract

An ethnomedicinal survey of the plants of Maidan Valley, Lower Dir District, Khyber Pakhtunkhwa Province, Pakistan was carried out to collect and document the information available with the local people. A total of 43 ethnomedicinal taxa were identified, that were distributed among 40 genera and 31 families and utilized by the local people for the treatment of various ailments. Amongst them thirty eight taxa were Angiosperms that included thirty four Dicotyledons and four Monocotyledons. The remaining five taxa comprised of two Pteridophytes, two Gymnosperms and one Fungus. Lamiaceae was the largest family with seven taxa, Apiaceae, the second largest family with three taxa followed by Amaranthaceae, Berberidaceae, Rhamnaceae, Rutaceae and Violaceae having two taxa each. The remaining families viz. Anacardiaceae, Asteraceae, Buxaceae, Canabiaceae, Cucurbitaceae, Euphorbiaceae, Fagaceae, Fumariaceae, Geraniaceae, Juglandaceae, Liliaceae, Morchellaceae, Oleaceae, Papaveraceae, Papilionaceae, Punicaceae Rosaceae, Saxifragaceae and Solanaceae had one taxa each of ethnobotanical importance.. They were mostly used in the form of dicoctions and infusionsas remedies against respiratory diseases viz. asthma, bronchitis, emphysema and pneumonia, kidney and urinary problems, circulatory disorders and skin diseases.

Keywords

Ethnomedicine; Ethnobotany; Khyber Pakhtunkhwa; Maidan Valley

Citation

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Introduction

Maidan Valley is situated in Dir Lower District of Khyber Pakhtunkhwa Province, Pakistan covering an area of 300 sq km and located between 34° - 37/ to 35° - 7/ N Latitudes and 71° -31/ to 72° - 14/ E longitudes. Maidan Valley is dominated by the southern part of Hindukush Mountain Range that has an altitude of 1800-2000 meters. Most of the population of the area is involved in farming, agriculture, horticulture and sericulture. The summer season is moderately hot, June and July are hottest months and in June the temperature ranges from 15.6°C to 32.5°C. The winter season is cold and severe and the temperature decreases rapidly from November onwards. December, January and February are the coldest months, during which the temperature falls below 0°C. During 2000, the average maximum and minimum temperature during the month of January were recorded as

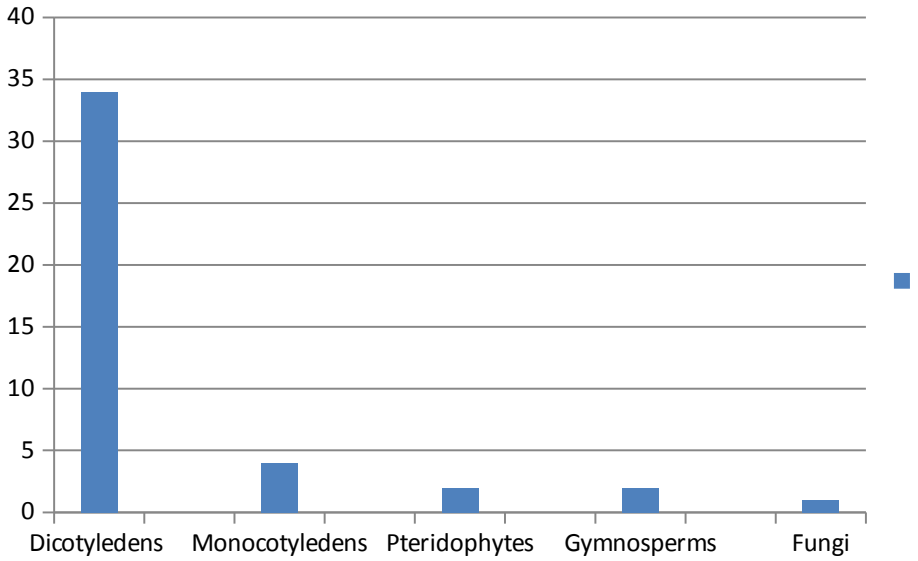

Fig. 1. Representation of different groups of plants species used ethnomedicinally in Maidan Valley

11.2°C and -2.4°C respectively [1]. The major crops grown are *Triticum aestivum, Zea mays, Saccharum officinarum, Oryza sativa, Curcubita maxima, Hibiscus esculentus, Solanum nigrum, Lycopersicon esculentum* and *Allium cepa* etc. The fruits grown in the region are *Citrus medica, Juglans regia, Diospyros lotus, Prunus persica, Punica granatum, Malus pumila and Vitis vinifera.* The most common Gymnosperms are *Pinus roxburghii, Cedrus deodara* and *Taxus baccata* while the common species of Angiosperms are *Celtis australis, Isodon rugosus, Quercus incana, Mentha viridis, Acacia nilotica, Dodonaea viscosa, Justicia adhatoda, Tagetes minuta, Chenopodiastrum murale, Amaranthus viridis, Salvia officinalis, Ajuga bracteosa, Lamium album.*, Pterodophytes seen in the region are *Pteris cretica, Pteris vittata, Thelypteris palustris, Adiantum incisum, Adiantum capillus-veneris, Adiantum caudatum, Cheilanthes subvillosa* and *Pteridium revolutum*.

Ethnomedicine is the study of traditional medicine practiced by indigenous people and ethnic groups. Ethnomedicine serves the dual purpose of documenting the traditional knowledge and utilizing the same for the production of novel drugs. About 80% people of all over the world still depend on the traditional system of health care [2]. New taxa of immense medicinal importance have been reported from various places in Pakistan [3-16].

Materials and Methods

Field trips were conducted to various localities in Lower Dir District *viz*. Zaimdara, Babagam, Shegai, Balokhan, Goharkat, Karin, Dabaku, Lacha and Uthala during the period. Previously prepared questionnaires were handed out to local inhabitants. The informants consisted of farmers, aged women, religious people, medicinal plant dealers and hakims. Mostly older people and herbal practitioners were consulted for obtaining the valuable information as they were found to possess a lot of knowledge about the local uses of plants and their important medicinal and traditional uses. The plant specimens were collected, photographed, tagged, pressed and finally mounted on standard herbarium sheets. Identification of the plants was done with the help of Flora of Pakistan [17]. The mounted specimens were deposited in the herbarium of Hazara University Mansehra, Pakistan [HUP].

Results and Discussion

A total of 43 ethnomedicinal taxa were identified, that were distributed among 40 genera and 31 families and utilized by the local people for the treatment of various ailments. Amongst them thirty eight taxa were Angiosperms that included thirty four Dicotyledons and four Monocotyledons. The remaining five taxa comprised of two Pteridophytes, two Gymnosperms and one Fungus (Fig. 1). Lamiaceae was the largest family with seven taxa, Apiaceae, the second largest family with three taxa followed by Amaranthaceae, Berberidaceae, Rhamnaceae, Rutaceae and Violaceae having two taxa each. The remaining families *viz*. Anacardiaceae, Asteraceae, Buxaceae, Canabiaceae, Cucurbitaceae, Euphorbiaceae, Fagaceae, Fumariaceae, Geraniaceae, Juglandaceae, Liliaceae, Morchellaceae, Oleaceae, Papaveraceae, Papilionaceae, Punicaceae Rosaceae, Saxifragaceae and Solanaceae had one taxa each of ethnobotanical importance (Fig. 2). Almost all parts of the plants were utilized (Fig. 3). The most commonly used plant part however was the leaf. In 37.21% of the reported plants, the useful part was the leaf. In seven of the plants, roots were used and in six seeds were used. In *Pistacia integerrima, Thymus linearis and Ziziphus jujuba* the fruits were utilized. Whole plants were

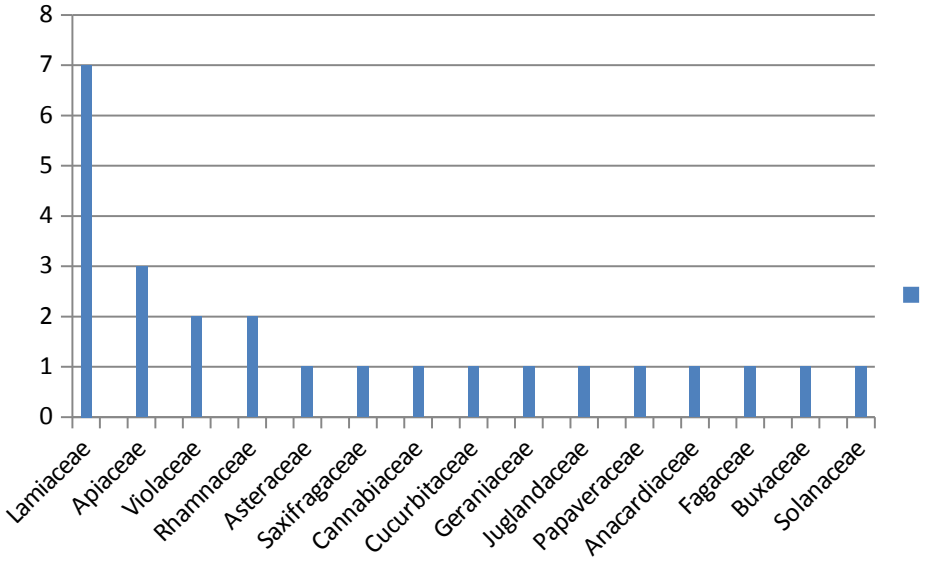

Fig. 2. Representation of ethnomedicinally important families in Maidan Valley

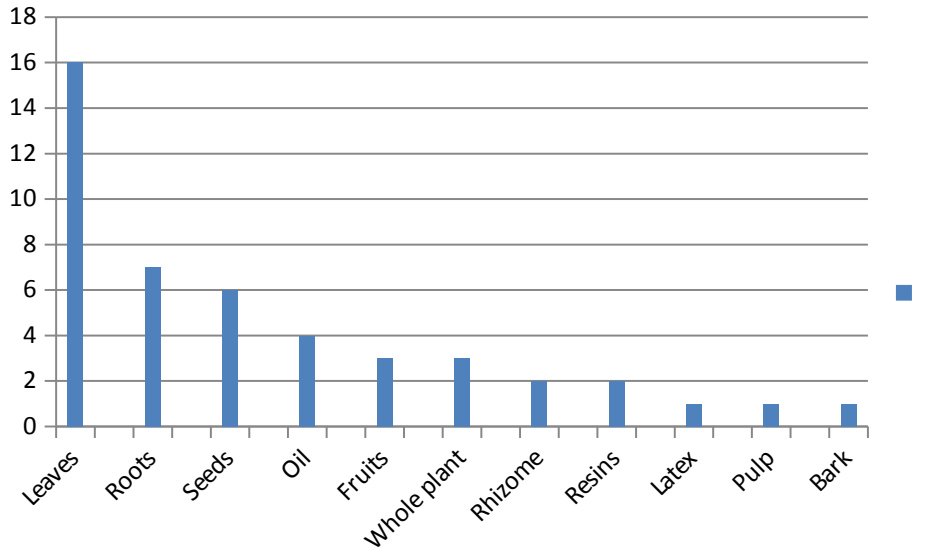

Fig. 3. Representation of different part/s used ethnomedicianally of plant species in Maidan Valley

used in the case of *Viola biflora, Equisetum arvense and Morchella esculenta.* Other plant parts such as the rhizome, bark, latex and resin were also made use of in the preparations. The results are summarized in Supplementary Table 1 Among the 43 plants documented, thirty eight (88.37%) were collected from the wild while the remaining five (12.63%) viz. *Ammi visnaga*, *Coriandrum sativum*, *Foeniculum vulgare*, *Papaver somniferum* and *Punica granatum* were cultivated.

Conclusion

It can be concluded from the current study that there is still widespread use of medicinal plants and traditional healing practices among the inhabitants of Maidan Valley. While some plants were used in the treatment of ailments like. respiratory infections, urinary problems, sterility, skin disorders, hepatitis, diabetes and fever others were used as tonics and in hair care. Greater utilization of the plants is suggested, keeping in mind its sustainability. The plants reported here are potential candidates for drug development and can be subjected to further investigations.

Acknowledgement

The authors are really thankful to the inhabitants of Maidan Valley, Lower Dir District, Khyber Pakhtunkhwa, Pakistan for sharing their precious traditional knowledge with us.

Conflict of interest

The authors declare no conflict of interest.

Authors' contribution

MI conducted the experiment and carried out the statistical analysis, IA designed the experiment and RA structured and wrote the manuscript.

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