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RESEARCH ARTICLE

Taxanomic study of family *Asteraceae* from ShishiKoh Valley, Chitral, Pakistan

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The current study pronounces the taxonomic revision of the family *Asteraceae* from the proposed area, Shishi Koh Valley, District, Chitral KPK, Pakistan. After surveyed total of 23 plant species (13. 93% of the total 165 spp. by Stewart in 1972) per 17 genera were identified, described and classified from Shishikoh Valley. The results revealed that all the collected species belong to herbs and *Artimisia* was dominant genera with high number of species 4 (17. 39%) followed by *Lactuca* 3 species (13. 04%), Tegetes 2(8. 69%) and the remaining genera contains 1(4. 34%) species in each.

Keywords: Chitral; Shishikoh Valley; Taxanomy of *Asteraceae*

Introduction

Vegetation distribution and scattered in proposed study area and their taxonomic revision is termed as flora. In taxanomic pyramids the location of plants species are calculations. The entire cultivated as well as wild plant species studied from research area termed as flora (Ali, 2008). Surplus floristic variability and high arid region, express the unique and supreme nature of Chitral District, Pakistan(Stewart 1972, 1982). The earth is represent high dominated and great diversity of flora determines as autotrophic organism. Reproduction through flower and fruits in plants species show evolutionary succession (Stebbins, 1974; Regal, 1977). Anyway the normally estimated major connections between developmental success of angiosperm and its diverse upsets preceded endangered (Crepet & Niklas, 2009). In all field of biodiversity the taxonomy is considerably weakened (Smith et al., 2008a; Pyŝek & Richardson, 2010). The Hindukush Himalaya is 3500 sq. km covered area, region of magnificent elevated diversity on the biosphere Laying between five international significant floristic region (Myers, 2001; Shinwari, 2010). The researcher chalked out recently the decline of flora of Kashmir through satellite imagery technique (Shaheen and Shinwari, 2012). In Chitral the endemic species Delphinium nordhagenii collected and categorized in 2012 ascritical endangered (CR) (Ali et al., 2012). However floristic complexity and additional mechanism may cause such type of destruction (Stützel and Trovó, 2013). Different zone of different district have been followed by uneven research work and made collection of vegetation (Malik et al., 2013; Amjad et al., 2013) unfortunately no proper comprehensive floristic studies carried out after Stewart 1972 (Khan et al., 2015). Chitral District, KPK, Pakistan show different type of vegetation and various type of documentation may carried out A unique land of Pakistan, Chitral District floristically very important and show various zone for plant documentation thus the different vallies show different type of documentation by different worker such as (Rashid awan et al., 2001) prepared documentation of 35 significant medicinally plants from entire Chitral, (Siraj et al., 2006) predicted 75 important medicinal taxa from booni chitral, (Farukh et al., 2007) collected 111 taxa, (Ali and Qaiser, 2009) added 83 medicinal plants in literature from entire Chitral, (Khan et al., 2011) added 31 important medicinal plant species from Chitral Gole National Park (CGNP), (Mukarram et al., 2012) introduced 82 medicinal taxa from Mastuj valley District Chitral, (Zahida et al., 2013) added 20 therapeutic taxa from Booni valle, District Chitral, (Asad et al., 2014) collected about 62 medicinal plant taxa from Bumborate valleyDistrict Chitral, (Hadi et al., 2014) made collection of 31 weed plants from Rech valley district Chitral, (Hadi & Ibrar, 2014) added 9 taxa into letrature from Bumborate valley District Chitral and at last (kifayat et al., 2017) made collection of plants species from mukhow valley, District Chitral. However Wali and Siraj in 2017 made collection of 29 species belong with 21 genera and 4 families. But the projectedworkis not anough for the studyarae, the current study designed to find out the diversity of Asteraceae from study area which has not being studied previously.

Materials and Methods

Study area

The study expanse is positioned in the main district of Khyber Pakhtunkhwa(KP), Chitral, Pakistan, along with 20% of the regional landscape is shelter. Chitral is internationaly familiar due to its beauty, attraction and recreation spot through the country. Hindukush mountain of province Khyber pakhtunkhwa covered with a most attractive spot of Chitral. ShishiKoh valley (study area) is sited toward the north east of Drosh Tehsil of District Chitral, Khyber Pakhtunkhwa, Pakistan and associated to Azodam Drosh which is about 3.1Km away from Drosh Bazaar. A uncomfortable jeepable road is link at Azodam joint to the study area along with latitude 35°35. 255′ N and 71°48. 466′ E longitude. Administratively the ShishiKoh Valley, District Chitral has a vigorous Union Council (UC) in Tehsil Drosh. The zone is additional divided into 33 villages, which are been located along the valleys. Entire estimated inhabitants of the valley are 14, 925 (AKHS, 2014). Map of Chitral is shown in Figure 1.

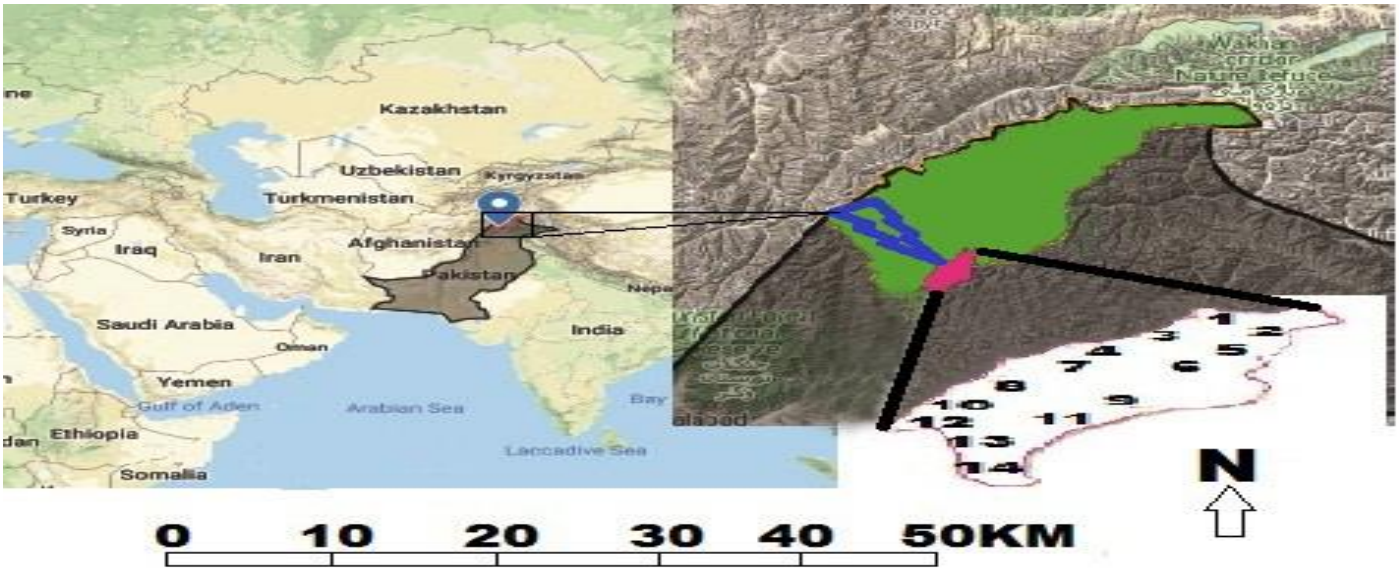

Figure 1. Map of study area; Shishikoh Valley District Chitral; 1 Madaklasht, 2 Tangalgol, 3 Balpanch, 4 Kawash, 5 Tingel Gol, 6 Goren gol, 7 Kashendel, 8 Birga nisar, 9 Purgal. 10 Istroom, 11 Pursat, 12 Muzdeh, 13 Huzoor Begandeh, 14 Shishi.

Field survey and collections

Throughout 2017-2019 the valley, Chitral is surveyed several time for the purposes of plant collection. Plants specimen were composed from entire sites of selected research area (Shishikoh valley). The collected sample of plant specimen were positioned in polythene bags during field survey after that the specimen processed for drying purpose and placed in newspaper at the end of the day and later the specimen placed in the wooden pressers for proper pressing the collection and to escape any type of parts wrinkling, folding and fall down.

Plant processing

Forman and Bridson procedure (1989) was followed after dried and poisoned, the poisoned plants were mounted on standard Herbarium sheath.

Identification

By technical taxanomic language the mounted specimen wereidentified and describe through morphological observation with reference to available literature and Flora of Pakistan (R. R, Stewart, 1972; Ali & Qaiser, 1986; Ali, 2008; Ali, 2000), available literature, other local floras and Herberium material.

Results and Discussion

The Shishikoh valley, District Chitral showed great taxonomic diversity. The climatic condition of the area is tough, harsh and arid by habitats the area show all the major groups of plant species which are dominantly exemplified in the region of Chitral. The dominated plants species in the proposed area being characterize by angiosperms and gymnosperms (dicots and monocot). The composition of flora are greatly varies in different sites of study area. The last valley of Shishikoh valley is Madaklasht having maximum altitudinal range of 2800m show greatly increase the diversity of plants. Similarly the plants diversity record has likewise been described by Ali and Qaiser1986 and Ali 2000 and 2008 from numerous districts of Pakistan. A total of 23 plant species belonging to the 17 genera were collected, described and classified from the research area through proper survey. The results revealed that genera *Artimisia* was dominant genera represented by 4 species with (17. 39%) followed by *Lactuca* 3 species (13. 04%), *Tegetes* 2(8. 69%) and the remaining genera contain 1(4. 34%) species in each. Genera *Artimisia* was the dominant genera of the family with respect to number of species in the current taxonomic investigation which shown in Table. 1

The study reveals the 1st time documentation plants taxa (Asteraceae) from Shishikoh valley District, Chitral. According to each researcher the Asteraceae is dominat throughout Chitral within each spot.

In current study 2 species *Seriphidium chitralense* (Podlech) Y. R. Ling. and *Anaphalis chitralensis* Qaiser & Rubina Abid are considered endemic taxa for District Chitral, collected 1st time from the study area. *Anthemis cotula* L., *Allardia tomentosa* Decne., *Anaphalis chitralensis* Qaiser & Rubina Abid, *Helianthus annuus* L. are collected from high elevation Madak lasht, above 8000ft from the study area followed by *Circium falconeri (*Hook. f.) Petr. from kashendal Shishikoh and 2 species of *Tagetes* are collected from the elevation of 6000ft. However the remaining species may be found in the elevation of less than 6000ft. The graph (figure 2) represent the percentage of generic representationof *Asteraceae* in the study area where Artimisia show high numer of genera with 17. 39% followed by Lactuca 13. 04% and Tagetes with 8. 69%. While the remaining genera with 4. 34% in each. In all over Chitral the researcher observed family *Asteraceae* in which the Artimisia genus is common and the inhabitant totally depend on this plants for the purpose of fuel, medicine and grazing all these anthropogenic activities may cause destruction of population of this plant taxa in the proposed area.

In the concern area anthropogenic activities, soil erosion, over grazing and habitat destruction may play important role in plant destruction. According to recent work, previous work and current report the area may face vegetation pressure due to the pharmaceutical pressure and other requirement of life resources. These species regressions may necessary to be controlled and maintenance for their existence and conservation of their resources. It is stated that Shishikoh valley display dangerous regions particularly high elevated valleys up to the alpine zone of Madaklasht demand nonstop efforts, so far plant investigation is considered, that more new taxa could be discovered.

Table 1. Floristic list show the diversity of plant taxa of *Asteraceae* in the research area.

Generic name	Botanical name	Local name	Locality	Altitude in ft
Anaphalis	*Anaphalis chitralensis* Qaiser & Rubina Abid	Zooba	Madak Lasht	± 8360
Anthemis	*Anthemis cotula* L.	Gangali shirisht	Madak Last	± 8390
Artemisia	*Artemisia scoparia* Waldst. & Kit	Zhaa dron	Shishi	± 4315
	Artemisia biennis Willd.	Mazheeni	Muz Deh	± 4840
	Artemisia maritima L.	Droon	Muzhdeh	± 4840
	Artemisia perviflora Roxb.	Kharkhalich	Shishi	± 4320
Circium	*Circium falconeri* (Hook. f.) Petr.	Chanchir	Kashindel	± 6000
Carthamus	*Carthamus tinctorius* L.	Poam	Shishi	± 4313
Centaurea	*Centaurea calcitrapa* L.	Ishparozokhoo	Shishi	± 4345
Cousinia	*Cousinia thomsonii* C. B. Clarke	Istoor Zokhoo	Shishi	± 4320
Echinops	*Echinops cornigerus* DC. Pordr.	Blansiri	Shishi	± 4334
Helianthus	*Helianthus annuus* L.	Yorot mukhnokorak	Madak Lasht	± 8395
Lactuca	*Lactuca virusa* L.	Khalaw thespuk	Pursat	± 4630
	Lactuca crambifolia (Bunge) Boiss.	Keleem josh	Pursat	± 4635
	Lactuca sativa L.	Keleem	Shishi	± 4315
Saussurea	*Saussurea jacea* Frilz Berger	Mroi joshoo	Madak Lasht	± 8292
Sonchus	*Sonchus asper* (L.) Hill	Gulan	Shishi	± 4320
Taraxacum	*Taraxacum officinale* Weber	Phovo	Birga Nisar	± 5440
Tagetes	*Tagetes minota* L.	Gul sambar	Kashindel	± 6000
	Tagetes erecta L.	Gul samber	Kashindel	± 6000
Allardia	*Allardia tomentosa* Decne.	Ponar	Madak Lasht Ghari	± 8925
Seriphidium	*Seriphidiumchitralense* (Podlech) Y. R. Ling.	Droon thespuk	Shishi	± 4321
Cichorium	*Cichorium intybus* L.	Khasti	Shishi	± 4305

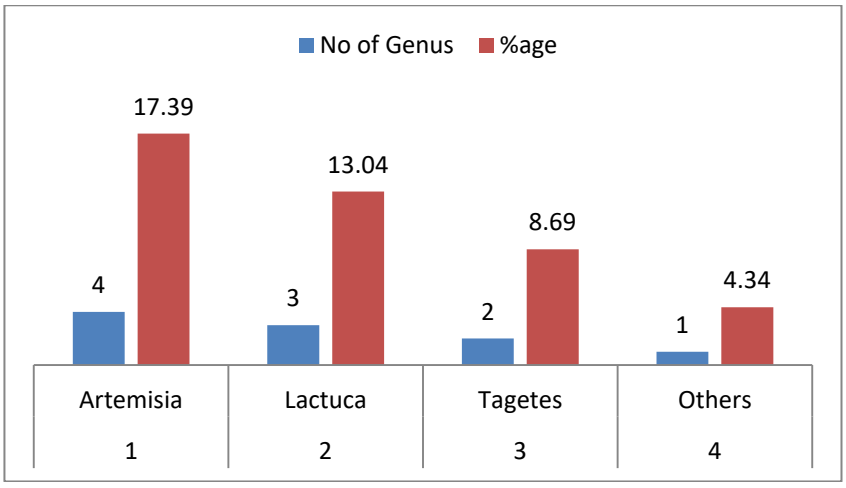

Figure 2. Graph show the percentage representation of the genera of selected Family.

Conclusion

valley is unexplored yet, therefore need constantly effort on the investigation of the valley and urgently needed conservation of threatened species into nurseries. The area may need to introduce and developed a monitoring program against deforestation and other anthropogenic activities. The life resources which are the basic needs of the valley, should be properly upgraded by providing all the basic needs of the valley and the people should be familiarized with plants and their importance.

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References

Ali, S. I. (2000). Impact of the environmental degradation on the biodiversity. In Proceedings:
Ali, S. I., Y. J. Nasir. (Eds.). (1989-1991). Flora of Pakistan. Department of Botany, University of Karachi, Pakistan. p. 191-193.
Ali, S. I. (2008). Significance of the flora with special reference to Pakistan. Pak. J. Bot. 40(3), 967-971.
Ali, H and M. Qaiser. (2009). The ethno botany of chitral valley, Pakistan with particular reference to medicinal plants. Pak. J. Bot, 41(4):2009-2041
Ali, H. (2009). Floristic studies of chitral. Threatened plants and conservation strategies, University of Karachi in the fulfillment of the requirement for the degree. "Doctor of philosophy" Department of botany University of Karachi, Karachi.
Amjad, M. S., M. Arshad, S. K. Chaudhari. (2013). Phenological patterns among the vegetation of NikyalValley, District Kotli, Azad Jammu and Kashmir, Pakistan. Br. J. of App. Sci. & Tech 3(4), 1505- 1518.
Awan, M. R, M. Shah, G. Akbar and S. Ahmad. (2001). Traditionally Uses of Economically Important Plants of Chitral District, MalakandDivision, NWFP Pakistan. Pakistan museum of Natural History, Islamabad. Pakistan. Pak. J. Bot. 33 (special issue).
Ahmad, K. S, W. K. Kayani, M. Hameed, F. Ahmad, T. Nawaz. (2012). Floristic diversity and ethnobotany of Sehnsa, District Kotli, Azad Jammu & Kashmir (Pakistan). Pak. J. Bot 44(SI), 195-201.
Aga Khan Health Services (AKHS). (2014). Report. Chitral.
Ajaib, M., Z. Khan., N. Khan., M. Wahab. (2010). Ethnobotanical studies on useful shrubs of District Kotli, Azad Jammu & Kashmir, Pakistan. Pak. J. Bot 42(3), 1407-1415.
Ali, H., M, Qaiser and K. B. Marwat. (2012). Contribution to the Red List of Pakistan: a case study of Delphiniumnordhagenii (Ranunculaceae) Pak. J. Bot., 44(1): 27-31.
Asad, U., A, Rashid and P. Nighat. (2014). Medicinal Plants Used in the Isolate Region of Bumburate, Kalash Valley, District, Chitral, Pakistan. Pak. J. Weed Sci. Res., 20(3): 359-373.
Bano, Z., A. Begum and K. Bano. (2013). Ethno-Botanical Studies of Some Seleted Plants in Mastuj, Chitral Valley, Khyber Pakhtunkhaw, 2013.. Canadian Journal of Applied Sciences. 1(3): 413- 426.
Crepet., K. J. Niklas. (2009). Darwin`s second abominable mystery`: why are there so many angiosperm species? Am. J. Bot 96, 366-381. Forman L, Bridson D. (Eds.). 1989. The herbarium handbook. Royal Botanic Gardens Kew.
Forman, L. and D. Bridson (Eds.). (1989). The herbarium handbook. Royal Botanic Gardens Kew.
Hadi, F and M. Ibrar. (2014). Ethnobotanical Profile of Gymnospermic Flora of Kalash Valley, District Chitral, Hindo-Kush Range, Pakistan. American-Eurasian J. Agric. & Environ. Sci., 14 (12): 1405-1408.
Hadi, F., Aziz., I. Muhammad, Ghulam., A. Muhammad, N. Khalid and A. Muhammad. (2014). Weed Diversity in Wheat and Maize with special reference to their Ethnomedicinal Uses at Rech Valley, Hindokush range, Chitral, Pakistan. Pak. J. Weed Sci. Res., 20(3): 335-346.
Hussain, F., M. Shah and H. Sher. (2007). Traditionnal Resource Evaluation of Some Plants of Mastuj, District Chitral, Pakistan. Pak. J. Bot., 39(2): 339-354.
Khan, Z. A., A. Kafeel, A. Muhammad., Rukhsana., P. Irfan, M. Ameer., K. Zahara., B. Nudrat. (2015). Bio-Accumulation of heavy metals and metalloids in Luffa (Luffacylindrica L.) irrigated domestic water in Jhang, Pakistan: A prospect human nutrition. Pak. J. Bot 47, 217-224.
Kifayat, U., J. Alam., H. Ali., H. Ahmad and S. Muhammad. (2017). Traditional knowledge of phanerogames of Mulkhow valley DistritChitral. Science Arena, Vol, 3 (2): 16-31.
Mukarram, S and F. Hussain. (2012). Ethno Medicinal Plants of Mastuj Valley, Hindukush Range, District, Chitral Pakistan J. Med. Vol. 6(26), pp. 4328-4332.
Meyer, N. (2001). Hot spot. In: Encyclopedia of Biodiversity, 3: 371-381.
Malik, Z. H., M. S. Amjad., S. Rafique., N. Z. Malik. (2013). Phytosociology of some weeds of wheat communities around Kotli fields, Western Himalaya. J. Ecol. Nat. Environ. 5(11), 340-345.
Myers, N. (2001). Hotspots. In: Encyclopedia of Biodiversity 3, 371-381.
Nasir. (2011). Important Medicinal plants of ChitralGol National Park(CGNP), Pakistan. Pak. J Bot. 43(2): 797-809.
Pyšek, P and D. M. Richardson. (2010). Invasive species, environmental change and management, and health. Annu. Rev. Environ. Resour 35, 25-55.
Regal, P. J. (1977). Ecology and evolution of flowering plant dominance. Science 196, 622-629.
Shaheen, H and Z. K. Shinwari. (2012). Phytodiversity and endemic richness of Karambar Lake vegetation from Chitral, Hindukush-Himalayas. Pak. J. Bot 44, 15-20.
Shinwari, Z. K. (2010). Medicinal Plants Research in Pakistan. J. Med. Pl. Res 4(3), 161-176.
Smith, R. D., G. I. Aradottir., A. Taylor and C. Lyal. (2008a). Invasive species management: what taxonomic support is needed? Nairobi, Kenya: Global Invasive Species Programme, Nairobi Kenya.
Stebbins, G. L. (1974). Plant species. Evolution above the species level. Cambridge, MA: Harvard University Press 62.
Stewart, R. R. (1972). An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir (Flora of West Pakistan), Fakhri Printing Press Karachi.
Stützel, T and M. Trovó. (2013). Inflorescences in Eriocaulaceae: taxonomic relevance and practical implications. Ann. Bot. 112(8), 1505-22.
Stewart, R. R. (1982). History and Exploration of Plants in Pakistan &Adjucent Area Karachi.
Siraj, A. A., H. B. Ali., A. Dasti and Z. K. Shinwari. (2006). Etnobotanical studies of some medicinal plants of Booni valley, District Chitral Pakistan,. Pak. J. WeedSci. Res 12(13): 183-190.
Wali, S and Siraj. (2017). Taxonomic diversity of some selected plant families of ShishiKoh Valley, Chitral, Pakistan international journalof Bioscience. Vol. 10, No. 6, p. 276-280.

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