

BIODIVERSITY OF WILD MEDICINAL PLANTS IN SOME AREAS OF THE SOUTHERN SLOPE OF THE HISSAR RIDGE

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Abstract:-

Are presented the results of studies to identify the biodiversity of wild medicinal plants on the territory of some parts of the southern slope of the Hissar ridge. As a result of researches it was established that in the territory of 11 gorges surveyed (Gusgarf, Ojuk, Gulobod, Gzhne, Semiganh, Safedchashma, Obi-Zugora, Magov, yos, Yavroz and Shamal) 174 species of medicinal plants, which belong to various Botanical taxa, are mainly distributed. This number of plants is formed by representatives of 106 genera, which belong to 46 families, among which representatives of the family Asteraceae (36 species), Rosaceae (19 species), Lamiaceae (16 species). The number of naked species is 11.6 % of the number of described medicinal plants on the territory of the Republic of Tajikistan. The four found species (*Rubus caesius* L., *R. turkestanicus* Pavl., *Rheum hissaricum* Losinsk., *R. maximowiczii* Losinsk) were plants that are widely eaten by the people.

Keywords:- Biodiversity, medicinal plants, family, species, Hissar range, agriculture.

INTRODUCTION

It is well known that the biological diversity of wild medicinal plants is a kind of indicator of favorable conditions of the place of growth. Their qualitative and quantitative composition is determined by a number of environmental factors (Khan et al., 2013). Due to climatic conditions in the Republic of Tajikistan described more than 1500 wild medicinal plants (Khojimatov, 1989).

Humans population growth, development of tourism and intensification of production capacity inevitably leads to an increase in anthropogenic load, which in combination with climate change leads to the depletion of natural resources of flora and fauna. First of all, this is reflected in the species composition of medicinal plants, which is shown in a number of scientific papers. In particular, were studied the biodiversity of resources and the impact of various environmental factors on the seed productivity of wild medicinal plants (Sattarov et al., 2017, 2018, 2018a). In addition, a geographical and species analysis of the flora of the Central Pamir-Alai was carried out (Safarov, 2013, 2013a). The number and age composition of coenopopulations of thermopsis long-fruited in the conditions of the Vakhsh and Hissar ranges was researched by S. Rakhimov (2010), and the productivity of high-mountain pastures of the Hissar range is reflected in the study of A.A. Madaminov (2010). The purpose of this study is to research the biodiversity of wild medicinal plants in some parts of the southern slope of the Hissar ridge, which is a natural buffer zone of Dushanbe city from the North, North-West, North-East and East sides.

Material/Methods

The research was carried out in 2012-2017 on the territory of Ramit gorge zone: sites (Semiganch, Safedchashma, Obi-Zugora, Magov, Yos, Yavroz), Varzob gorge zone (Gusgarf, Ojuk, Gulobod, Gazhne) and Shamal gorge (Almasy river basin). Site surveys were carried out to the upper limit of the middle category belt, i.e. to the height of 2500 m above sea level (fig. 1). Processing and verification of herbarium material in determining plant species was carried out according to the directory (Flora of the Tajik SSR, 1957, 1963, 1968, 1975, 1978, 1981, 1984, 1986, 1988, 1991), as well as online determinant of plants (www.plantarium.ru). The systematic affiliation of the taxon was established according to the accepted classifier (Takhtajyan, 1987). It should be noted that the Ramit and Varzob zones of gorges are the most recreational areas of the Republic of Tazhikistan, and are subject to a large anthropogenic load in the form of tourism and active recreation in the spring-summer and summer-autumn seasons.



1-Gusgarf, 2 - Ojuk, 3-Village, 4-Gagne, 5-Semigen, 6-Safecase, 7-Obi-Zugora, 8-Magov, 9Yos, 10-Yavroz, 11-Shamal

Figure 1. Areas of research

Results

As a result of the conducted researches it was revealed that in the territory of the above-mentioned sites 174 species of medicinal plants which belong to various Botanical taxa are found. The specimens found are representatives of 106 genera, which belong to 46 families, among which predominate representatives of the family *Asteraceae* (36 species), *Rosaceae* (19 species) and *Lamiaceae* (16 species). In relation to the total number of species of medicinal plants peculiar to the Republic of Tajikistan, this is 11.6 %. Of the discovered plants, 20 species are recognized medicinal plants (table 1), 56 species are medicinal plants used in folk medicine (table 2), 8 species are classified as endangered species and listed in the Red book of the Republic of Tajikistan (table 3), and 18 species are plants endemic to Central Asia and the Pamir-Alai (table 4). The monitoring also revealed 4 species of adventitious plants (*Taraxacum officinale* Wigg., *Plantago major* L., *Matricaria recutita* L., *Geranium robertianum* L.). The four found species (*Rubus caesius* L., *R. turkestanicus* Pavli., *Rheum hissaricum* Losinsk., *R. maximowiczii* Losinsk) were plants that are widely eaten by the people.

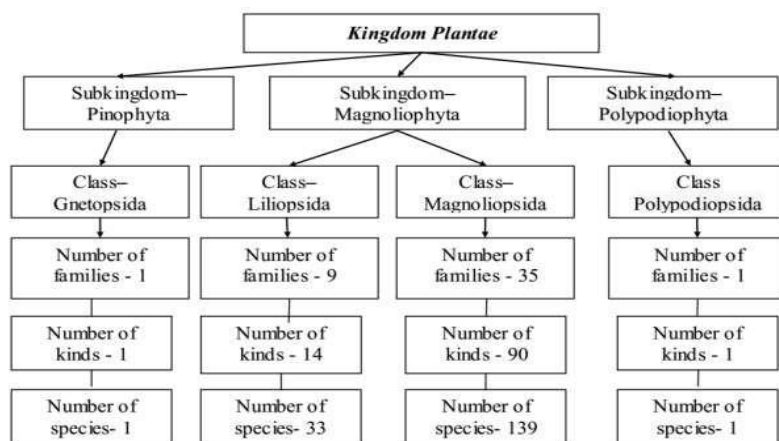


Figure 2. Quantitative distribution of medicinal plants on the territory of some parts of the southern slope of the Hissar ridge

Figure 2 shows the quantitative distribution of medicinal plants by their belonging to departments, classes, families, genera and species according to the phylogenetic classification of academician A. L. Takhtajyan (1987).

Conclusion

As a result of the conducted researches it was revealed that in the territory of Varzob and Ramit zones of gorges medicinal plants are presented by departments of angiosperms, gymnosperms and ferns. The subkingdom of gymnosperms is represented by only one species-*Ephedra equisetina* Bunge, which belongs to the class Gnetopsida and the family Ephedraceae.

The subkingdom of angiosperms represented by monocotyledonous and dicotyledonous plants. The class of monocotyledons is formed by representatives of 9 subfamilies: Liliaceae, Hyacinthaceae, Asphodelaceae, Alliaceae, Asparagaceae, Convallariaceae, Amaryllidaceae, Iridaceae, Araceae and 14 genera, and the class of dicotyledons is formed by representatives of 35 families and 90 genera. The subkingdom of fern-like plants is represented by one species, *Cystopteris filix-fragilis* (L.) Borbas, which belongs to the family of true ferns (Polypodiaceae). BR.).

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Table 1. List of generally recognized medicinal plants

No	Plants name
1	<i>Althaea officinalis</i> L.
2	<i>Inula helenium</i> L.
3	<i>Hypericum perforatum</i> L.
4	<i>Taraxacum officinale</i> Wigg.
5	<i>Plantago major</i> L.
6	<i>Artemisia absinthium</i> L.
7	<i>Matricaria recutita</i> L.
8	<i>Glycyrrhiza glabra</i> L.
9	<i>Rosa achburensis</i> Chrshan.
10	<i>Rosa beggeriana</i> Schrenk
11	<i>Rosa korshinskyana</i> Bouleng.
12	<i>Rosa canina</i> L.
13	<i>Rosa ovchimmikovii</i> Koczk.
14	<i>Rosa foetida</i> Herrm.
15	<i>Rosa divina</i> Sumn.
16	<i>Rosa maracandica</i> Bunge
17	<i>Rosa corymbifera</i> Borkh.
18	<i>Rosa fedtschenkoana</i> Regel
19	<i>Rosa ecae</i> Aitch.
20	<i>Ephedra equisetina</i> Bunge

Table 2. List of discovered medicinal plants used in folk medicine of the Republic of Tajikistan

No	Plants name	No	Plants name
1	<i>Arum korolkowii</i> Regel	29	<i>Amygdalus bucharica</i> Korsh .
2	<i>Berberis heterobotrys</i> E.L. Wolf	30	<i>Echinops maracandicus</i> Bunge (2)
3	<i>Vinca erecta</i> Regel	31	<i>Daucus carota</i> L.
4	<i>Heracleum lehmannianum</i> Bunge	32	<i>Pedicularis olgae</i> Regel
5	<i>Crataegus pontica</i> C. Koch	33	<i>Mentha asiatica</i> Boriss.
6	<i>C. turkestanica</i> Pojark.	34	<i>Tanacetum pseudoachillea</i> C. Winkl.
7	<i>Dianthus baldshuanicus</i> Lincz.	35	<i>Pyrethrum parthenium</i> (L.) Smith
8	<i>Dianthus seravschanicus</i> Schischk.	36	<i>Plantago lanceolata</i> L.
9	<i>Dianthus tetralepis</i> Nevski	37	<i>Polychryzum tadshikorum</i> (Kudr.) Kovalevsk.
10	<i>Gimnospermium albertii</i> (Regel) Takht.	38	<i>Artemisia vulgaris</i> L.
11	<i>Gentiana olivieri</i> Griseb.	39	<i>Pseudohandelia umbellifera</i> (Boiss.) Tzvel.
12	<i>Polygonum hissaricum</i> M. Pop.	40	<i>Cystopteris filix-fragilis</i> (L.) Borbas
13	<i>Lychnis coronaria</i> (L.) Desr.	41	<i>Rhaponticum integrifolium</i> C. Winkl.
14	<i>Datisca cannabina</i> L.	42	<i>Matricaria suaveolens</i> (Pursch) Buch.
15	<i>Inula macrophylla</i> Kar. et Kir.	43	<i>Rhus coriaria</i> L.
16	<i>Origanum tyttanthum</i> Gontsch.	44	<i>Thermopsis dolichocarpa</i> V. Nikit.
17	<i>Hypericum elongatum</i> Ledeb.	45	<i>Achillea biebersteinii</i> Afan.
18	<i>Hypericum scabrum</i> L.	46	<i>Achillea filipendulina</i> Lam.
19	<i>Ziziphora brevicalyx</i> Juz.	47	<i>Ungernia victoris</i> Vved.
20	<i>Ziziphora pamiroalaica</i> Juz.	48	<i>Ferula kuhistanica</i> Korov.
21	<i>Phlomis cashmeriana</i> Royle ex Benth.	49	<i>Handelia trichophylla</i> (Schrenk) Heimerl
22	<i>Verbascum songaricum</i> Schrenk	50	<i>Cichorium intybus</i> L.
23	<i>Megacarpaea gigantea</i> Regel in Bull.	51	<i>Salvia sclarea</i> L.
24	<i>Potentilla kulabensis</i> Th. Wolf.	52	<i>Salvia turcomanica</i> Pobed.
25	<i>Potentilla canescens</i> Bess.	53	<i>Rumex paulsenianus</i> Rech. f.
26	<i>Arctium leiiospermum</i> Jus. et Serg.	54	<i>Eremurus ambigenus</i> Vved.
27	<i>Melissa officinalis</i> L.	55	<i>Frangos pabularia</i> Lindl.
28	<i>Erigeron hissaricus</i> Botsch.	56	<i>Lamium album</i> L.

Table 3. List of discovered medicinal plants included in the Red book of the Republic of Tajikistan

No	Plants name
1	<i>Allium rosenbachianum</i> Regel
2	<i>Allium stipitatum</i> Regel
3	<i>Allium suworowii</i> Regel
4	<i>Ostrowskia magnifica</i> Regel
5	<i>Paeonia intermedia</i> C. A. Mey.
6	<i>Eremurus aitchisonii</i> Baker
7	<i>Ungernia victoris</i> Vved.
8	<i>Juno nicolai</i> Vved.

Table 4 List of discovered plants endemic to Central Asia and Pamir-Alai

No	Plants name
1	<i>Astragalus macropodium</i> Lipsky
2	<i>Astragalus heterotrichus</i> Gontsch.
3	<i>Anemone verae</i> Ovcz. et Scharip.
4	<i>Iris hoogina</i> Dykes
5	<i>Cousinia tomentella</i> C. Winkl.
6	<i>Cousinia grigoriewii</i> Juz.
7	<i>Potentilla kulabensis</i> Th. Wolf.
8	<i>Pseudosedum condensatum</i> Boriss.
9	<i>Oxytropis baldshuanica</i> B. Fedtsch.
10	<i>Oxytropis roseiformis</i> B. Fedtsch.
11	<i>Rheum hissaricum</i> Losinsk.
12	<i>Asparagus bucharicus</i> Iljin
13	<i>Thermopsis dolichocarpa</i> V. Nikit.
14	<i>Tulipa praestans</i> Hoog
15	<i>Chesneya hissarica</i> Boriss.
16	<i>Rosa achburensis</i> Chrshan.
17	<i>Rosa korshinskyana</i> Bouleng.
18	<i>Eremurus brachystemon</i> Vved.