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HERBAL FLORA OF SONAMARG, KASHMIR

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ABSTRACT

Flora of particular geographical area provides information about total number of plant species present on it, their identification description distribution and economic utility etc. In other words; it is a documentary, which acts as a platform for the overall progress of botany in any given country. Present study was carried out to study the herbal flora of Sonamarg area of Kashmir Valley, in order to form a check list of herbal flora of this famous tourist resort.

Key words: Herbal flora, Sonamarg, medicinal plants

INTRODUCTION

Floristic diversity studies provide a ready reference to the plant wealth of a particular area. These studies involve the processes of collecting and observing plant material in the field, processing it, storing it in herbaria and using it as the primary basis from which we derive our knowledge of identity of plants and our ability to communicate about them.

Kashmir valley supports a rich plant wealth, which catches the eyes of every one, be a botanist a naturalist a poet or a layman. The vegetation of Kashmir is extremely diverse owing to great variation in altitude, climate and edaphic factors resulting in a vast array of habitat types. This habitat diversity accounts for a rich marsh and aquatic vegetation in the valley and varied types of forests with great floral diversity along the mountains.

A preliminary study on the cultivation of medicinal plants in Jammu and Kashmir was published by Chopra *et al.* (1956). Medicinal plants of Kashmir have been surveyed by Chopra and Kapoor (1952), Kapoor *et al.* (1957), Kaul (1997), Pandey (2000) and Dar *et al.* (2002). The aim of the present study was to prepare a general checklist of herbal flora of Sonamarg region of this Valley.

STUDY AREA

Sonamarg "The Meadow of Gold" is situated 87 km from Srinagar, Kashmir and lies between geographical co-ordinates 34° 18' 0" N latitude and 75° 18' 0" E longitude and at an altitude of 2740 m. The aim of the present study was to prepare a general checklist of flora of Sonamarg region of Valley.

Kashmir valley is enclosed entity and experiences a temperate and mediterranean type of climate with four distinct seasons-springs, summer, autumn and winter (c.f. Kaul, 1997). The climate of Sonamarg is very bracing, but the rainfall is frequent though not heavy, except for two or three days at a time in July and August with fine spell in between summer (May to October)

are bit warm and pleasant with cool atmosphere and climate Average temperature is around 14°C. Winters (November to April) are chilly with temperature goes down to sub zero level.

MATERIAL AND METHODS

The main aim of the survey was to enlist the herbs present in the study area. For this 4 study sites were selected in the Sonamarg area as given below:

Site I

Baltal is located 14km upstream from Sonamarg and lies between geographical co-ordinates of 34° 15' N latitude and 75° 24' E longitude and at an altitude 2,850 (a.s.l).

Site II

Yashmarg is famous for picnic spot located near Sonamarg, know for its pastures, ponies and fires. It lies between geographical coordinates 34° 17' N and 75° 19' E and at an altitude of 2,172 m (a.s.l).

Site III

It lies at an altitude of 2,705m (a.s.l) within geographical coordinates at 34° 18' N and 75° 15' E.

Site IV

Thajwas is located 3km away from Sonamarg it lies between geographical coordinates 34°17' N latitude and 75°12' E longitude and at an altitude of 2,617m (a.s.l.).

During the survey of 6 months period, monthly visits were performed to the study sites for survey and collection of plant specimens. The plant specimens were collected randomly which included whole plant collection, branches of various herbs and shrubs. The recommended methods were employed in collecting and preserving the plant species. Finally the pressed specimens (Herbarium) prepared were used for identification by experts at Centre of Plant Taxonomy, Department of Botany University of Kashmir. For identification purpose different relevant floras, monographs and other works were consulted.

RESULTS AND DISCUSSION

Present study about the flora of the Sonamarg has revealed that the area harbours about 48 plant species belonging to 23 families (Table 1 and 2). These plants were collected from the study area which comprises of pastures and forests. The area is thus enriched with diverse flora predominantly herbaceous vegetation. In the study area woody flora comprised of shrubs and climbers.

Out of 48 species, the largest family in the study area is Asteraceae comprising of 12 species belonging to 11 genera followed by Lamiaceae and Rosaceae with 4 species each.

Table 1. List of plants with families recorded at four different sites

S.No.	Name of species	Family
01.	*Achillea millefolium*	Asteraceae
02.	*Ageratum houstonianum*	Asteraceae
03.	*Amaranthus caudatus*	Amaranthaceae
04.	*Capsella bursa- pastoris*	Brassicaceae
05.	*Carex fetia*	Cyperaceae
06.	*Centaurea iberica*	Asteraceae
07.	*Cirsium wallichii*	Asteraceae
08.	*Conyza canadensis*	Asteraceae
09.	*Daphne oleoides*	Thymelaeaceae
10.	*Daucus carota*	Apiaceae
11.	*Dioscorea deltoidea*	Dioscoreaceae
12.	*Erigeron multicaulis*	Asteraceae
13.	*Euphorbia helioscopia*	Euphorbiaceae
14.	*Fragaria nubicola*	Rosaceae
15.	*Iris ensata*	Iridaceae
16.	*Jurinea macrocephale*	Asteraceae
17.	*Lactuca decipiens*	Asteraceae
18.	*Lactuca dissecta*	Asteraceae
19.	*Lancea tibetica*	Scrophulariaceae
20.	*Lolium perenne*	Poaceae
21.	*Malva neglecta*	Malvaceae
22.	*Medicago Lupulina*	Paplionaceae
23.	*Medicago* sp.	Paplionaceae
24.	*Pedicularis cheilanthifolia*	Scrophulariaceae
25.	*Plantago lanceolata*	Plantaginaceae
26.	*Podophyllum hexandrum*	Berbediaceae
27.	*Polygonum persicaria*	Polygonaceae
28.	*Polygonum persicaria*	Polygonaceae
29.	*Potentilla reptans*	Rosaceae
30.	*Prunella vulgaris*	Lamiaceae
31.	*Rosa webbiana*	Rosaceae
32.	*Rubus* sp.	Rosaceae
33.	*Rumex hastatus*	Polygonaceae
34.	*Saliva* sp.	Lamiaceae
35.	*Salvia moorcroftiana*	Lamiaceae

36.	*Sonchus oleraceus*	Asteraceae
37.	*Sorghum halepense*	Poaceae
38.	*Stachys floccosa*	Lamiaceae
39.	*Stellaria media*	Caryophyllaceae
40.	*Stipa sibirica*	Poaceae
41.	*Taraxacum officinale*	Asteraceae
42.	*Trifolium pratense*	Paplionaceae
43.	*Tussilago farfara*	Asteraceae
44.	*Urtica dioica*	Urticaceae
45.	*Veronica persica*	Scrophulariaceae
46.	*Viburnum* sp.	Caprifoliaceae
47.	*Vinca major*	Apocynaceae
48.	*Viola odorata*	Violaceae

Table 2. List of families with species number and genera

S. No	Family	No of species	No of genera
01.	Amaranthaceae	1	1
02.	Apocynaceae	1	1
03.	Apiacae	1	1
04.	Asteraceae	12	10
05.	Brassicaceae	1	1
06.	Berbidaceae	1	1
07.	Caprifoliaceae	1	1
08.	Caryophyllaceae	1	1
09.	Cyperaceae	1	1
10.	Discoraceae	1	1
11.	Euphorbiaceae	1	1
12.	Iridaceae	1	1
13.	Lamiaceae	4	3
14.	Malvaceae	1	1
15.	Paplionaceae	3	2
16.	Plantagonaceae	1	1
17.	Poaceae	3	3
18.	Polygonaceae	3	3
19.	Rosaceae	4	3
20.	Scrophulariaceae	3	3
21.	Thymelaeaceae	1	1
22.	Urticaceae	1	1
23.	Violaceae	1	1

An attempt was also made to prepare the list of medicinally important plants collected during the survey of the area studied (Table 3). It was observed that the study area was found to harbour 24 plant species belonging to different families which have medicinal value which indicated that the area is very important from economic perspective.

Table 3. List of Medicinal plants with their family and medicinal use (Khare, 2007; Mojob *et al.*, 2003; Singh and Panda, 2005)

S. No.	Name of species	Family	Medicinal uses
01.	*Achillea millefolium*	Asteraceae	Used as haemosatic in lung and kidney haemorrhage. It is also used as anti-inflammatory, antiseptic, antispasmodic, aromatic, carminative, diuretic, stimulant, vasodialator and tonic.
02.	*Capsella bursa pastoris*	Brassicaceae	Herb is a vasodilator, hastens coagulation and constricts blood vessels. It is also used as mild diuretic.
03.	*Daphne oleoides*	Thymelaeaceae	Bark used as an ointment for ulcers and in cutaneous diseases especially eczema. Also used as antihelminthic.
04.	*Daucus carota*	Asteraceae	Roots prescribed in palpitation, cough and bronchitis, carrot lowers uric acid and blood sugar.
05.	*Dioscorea deltoidea*	Dioscoreaceae	Good source of steroidal hormone and basis for antifertility drugs, plant has been used as antirheumatic and to treat opthalimic conditions.
06.	*Euphorbia helioscopia*	Euphorbiaceae	Plant root is antihelminthic, seeds used for treating cholrea, latex is used as antiseptic, plant is also used as expectorant and diaphoretic.
07.	*Fragaria nubicola*	Rosaceae	Used as carminative and purgative, also used in stomach disorders and in fever.
08.	*Iris ensata*	Iridaceae	Used in diseases of liver, root extracts are used in cosmetic preparations for prevention of skin roughness and ageing.
09.	*Jurinea macrocephale*	Asteraceae	Roots considered as stimulant and also given in fever.
10.	*Lactuca decipiens*	Asteraceae	Used in headache and in tonic.
11.	*Lanceae tibetica*	Scrophulariaceae	Used for treatment of pulmonary disorders, heart disorders and for healing of wounds.
12.	*Malva neglecta*	Malvaceae	Used as astringent, laxative, diuretic and to counteract inflammation.

13.	*Pedicularis cheilanthifolia*	Scrophulariaceae	Antispasmodic for muscle cramps and used against stomach ache.
14.	*Podophyllum hexandrum*	Berbidaceae	Used as hepatic stimulant, purgative and in treating many skin diseases and tumorous growths.
15.	*Polygonum persicaria*	Polygonaceae	Leaves are astringent, diuretic and vermifuge, infusion has been used as treatment of gravel and stomach pains.
16.	*Potentilla reptans*	Rosaceae	Antispasmodic ,astringent and febrifuge, used in treatment of diarrhea, sore throat and tooth ache.
17.	*Prunella vulgaris*	Lamiaceae	Used in treatment of wounds, ulcers, sores, fevers, diarrhea, sore mouth, internal bleeding and nephritis. Plant is antibacterial, antipyretic, antiseptic, antispasmodic,, astringent, antispasmodic, astringent, carminative and diuretic.
18.	*Rosa webbiana*	Rosaceae	It is used as tonic, astringent, mild diuretic and mild laxative.
19.	*Rumex hastatus*	Polygonaceae	Root is laxative, tonic and antirheumatic and can be used in skin diseases, applied to skin diseases, applied on cuts and wounds to check bleeding.
20.	*Salvia moorcroftiana*	Lamiaceae	Roots are used in the treatment of colds and coughs, seed is emetic and plant is used in the treatment of dysentery, haemmorrhoids, colic and boils, dressing of wounds.
21.	*Sonchus oleraceus*	Asteraceae	Plant has anticancer activity, stem juice is cathartic, leaves are applied as a poultice to inflammatory swellings and infusion of the leaves and roots is febrifuge and tonic.
22.	*Taraxacum officinale*	Asteraceae	Plant is antibacterial, strongly diuretic, aperients, hepatic, and laxative, depurative and is used in treatment of gallstones, urinary disorder, jaundice, gout, eczema and acne.
23.	*Tussilago farfara*	Asteraceae	Demulcent, expectorant, astringent, emollient, stimulant and tonic. Used in treatment of coughs and respiratory problems.
24.	*Viola odorata*	Violaceae	Used in treatment of cancer, whooping cough, headaches, migraine and insomnia. Plant is anti-inflammatory, diaphoretic, diuretic, expectorant and laxative.

The floristic diversity of study area is represented by Dicots with about 44 species belonging to 39 genera followed by monocots with 04 species belonging to 3 genera (Table 4).

Table 4. Number and percentage of dicots and monocots recorded at Sonamarg site

S.No	Number	Percentage
Dicots	44	04
Monocots	91.66	8.33

An attempt was also made to classify the samples collected into various life forms (Table 5), which clearly revealed that herbs were dominant in area.

Table 5. Life forms of plants along with their number and percentage

S.No.	Life Forms	Number	Percentage
1	Herbs	43	89.58
2	Shrubs	3	6.25
3	Sub-Shrubs	1	2.08
4	Climbers	1	2.08

CONCLUSIONS

From the study undertaken it was concluded that the Sonamarg area of Kashmir valley has a rich floristic diversity bestowed with many diverse plant species. The floristic diversity of the study area is represented by 48 plant species belonging to 22 families.

The floristic study of the Sonamarg reveals that the area is predominantly covered by herbaceous flora and being less represented in terms of number of species. Dicots form major component of vegetation as compared to monocots. Among Dicotyledons the Asteraceae is the largest family with 12 species and for monocotyledons the Poaceae is the largest family with 3 plant species. Out of 48 plant species 23 have medicinal value.

Asteraceae is the largest family recorded, with about 12 plant species followed by Lamiaceae and Rosaceae with about 4 plant species each.

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