

Diversity of tribe Astereae (Asteraceae) of Jammu and Kashmir

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Abstract

Introduction: The present paper deals with tribe Astereae comprising of 62 species representing 17 genera of family Asteraceae. The study of this tribe is based on the species within the limits of Jammu and Kashmir State. Many of the species are confined to the alpine zones of Kashmir Himalayas. Tribe Astereae is rich one and studies regarding the number of species in each genus are given.

Material and Methods: The study of species of this tribe was made in different parts of Jammu and Kashmir. The genera and species were identified with the help of taxonomic literature and compilation of works of other authors wherever required. The change in colour of the florets on drying causes difficulty to know the identity of species.

Result: The tribe Astereae is compiled for the first time from the state of Jammu and Kashmir. Astereae constitutes 2.06% and 2.53% of the species in Jammu and Kashmir and India respectively in comparison to 3000 species of this tribe reported from the world. Eight genera of the tribe Astereae have been reported from the state of Jammu and Kashmir with single species.

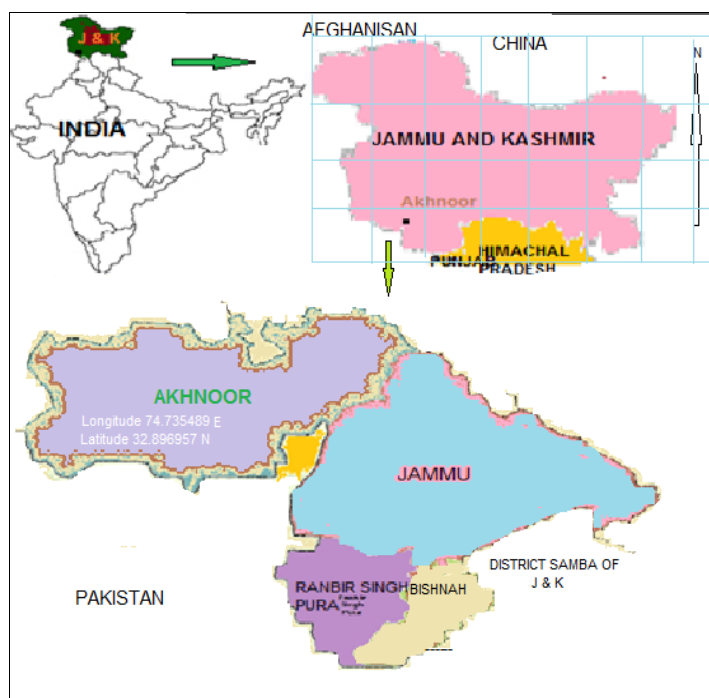
Keywords: astereae, Asteraceae, flora, Jammu and Kashmir, India

Introduction

Astereae is one of the largest tribes of family Asteraceae comprising of 170 genera and over 3000 species [4]. The concentration of the species of this tribe in the flora of Jammu and Kashmir [Fig. 1] is more in the hilly areas of Kashmir than in plains of Jammu region. In India the tribe is represented by 76 species of belonging to 20 genera [6]. In Jammu and Kashmir, the tribe represents 62 species of 17 genera of tribe astereae. The most dominant genus of this tribe is *Erigeron* representing 19 species followed by *Aster* (14

species) and *Conyza* (5 species). Out of the total 17 genera, 8 genera are represented by a single species in the composite flora of Jammu and Kashmir.

Perusal of floristic literature shows a number of workers have explored in past, the prominent among them are Royle [8], Hooker [7], Stewart, [14], Singh and Kachroo [13], Sharma and Kachroo [11, 12], Dhar and Kachroo [5], Hajra *et al.* [6], Sharma and Jamwal [9, 10], Swami and Gupta (15), Bhellum and Magotra [1] and Bhellum [2, 3].



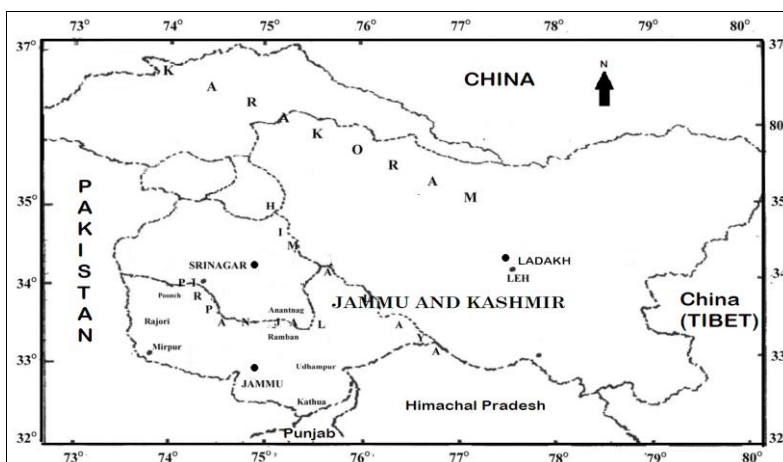


Fig 1: Map of Jammu and Kashmir

Material and Methods

The observations of the members of this tribe were made in different parts of Jammu and Kashmir. The genera and species were identified with the help of taxonomic literature and compilation of works of other authors wherever required. The change in colour of the florets on drying causes difficulty to know the identity of species.

Characteristics

Herbs, shrubs; leaves alternate, usually entire; capitula often with ray florets; phyllaries in many rows; ray florets numerous; anthers obtuse and ecaudate; style branched terminating in acute appendages; cypselae often ribbed; pappus absent or bristles or scales.

Genera and Species of tribe astereae cass.

1. *Aster* L.

14 species in Jammu and Kashmir and 23 species in India.

Aster albescens (DC.) Hand.-Mazz.

A. altaicus Willd.

A. asteroids (DC.) O. Kuntze

A. diplostehioides (DC.) C. B. Clarke

A. falconeri (C. B. Clarke) Hutch.

A. flaccidus Bunge

A. himalaicus C. B. Clarke

A. indamellus Grierson

A. laka C. B. Clarke

A. molliusculus (DC.) C. B. Clarke

A. peduncularis Wall. ex Nees

A. thomsoni C. B. Clarke

A. tibeticus Hook. f.

2. *Bellis* L.

1 species in Jammu and Kashmir and 1 species in India.

Bellis perennis L.

3. *Brachiactis* Ledeb.

3 species in Jammu and Kashmir and 3 species in India.

Brachiactis menthodora Benth.

B. pubescens (DC.) Aitch.

B. roylei (DC.) Wend.

4. *Brachycome* Cass.

1 species in Jammu and Kashmir and 1 species in India.

Brachycome iberidifolia

5. *Callistephus*

1 species in Jammu and Kashmir and 1 species in India.

Callistephus chinensis (L.) Nees

6. *Calotis* Br.

1 species in Jammu and Kashmir and 1 species in India.

Calotis hispidula (F. Muell.) F. Muell.

7. *Conyza* Less.

6 species in Jammu and Kashmir and 10 species in India.

Conyza aegyptiaca (L.) W. Ait.

C. bonariensis (L.) Cronq.

C. Canadensis (L.) Cronq.

C. japonica (Thunb.) Less. ex DC.

C. stricta Willd.

C. sumatrensis (Ritz.) Walker

8. *Cyathocline* Cass.

1 species in Jammu and Kashmir and 2 species in India.

Cyathocline purpurea (Buch. Ham. ex D. Don) O. Kuntze

9. *Dicrocephala* L Herit ex DC.

1 species in Jammu and Kashmir and 4 species in India.

Dicrocephala integrifolia L' Herit ex DC.

10. *Erigeron* L.

19 species in Jammu and Kashmir and 19 species in India.

Erigeron acris L.

E. alpinus L.

E. altissimus Stewart

E. angustissimum Lindl. ex DC.

E. bellidioides (Buch. Ham ex D. Don) Benth.

E. jaeschkei Vierh.

E. karvinskiarus DC.

E. kumaonensis (Vierh.) Wendelbo

E. monticolus DC.

E. multicaulis Wall. ex DC.

E. multiradiatus (Lindl. ex DC.) C. B. Clarke

- E. pseudohyrcanicus* Grierson ex Stewart
- E. roylei* DC.
- E. semibarbatus* DC.
- E. sublyratus* DC.
- E. swatensis* Grierson ex Stewart
- E. uniflorus* L.
- E. venustus* Botsch.

11. Grangea Adans.

1 species in Jammu and Kashmir and 1 species in India.
Grangea maderaspatana (L.) Poir

12. Heteropappus Less.

4 species in Jammu and Kashmir and 4 species in India.
Heteropappus altaicus (Willd.) Novopokr.
H. gouldii (C. E. C. Fischer) Grierson
H. holohermaphroditus Grierson
H. semiprostratus Grierson

13. Myricactis Less.

4 species in Jammu and Kashmir and 5 species in India.
Myricactis javanica (Blume) DC.
M. javanica (Bl.) DC. Var. *kailashiensis* Bhellum
M. nepalensis Less.
M. wallichii Less.
M. wightii DC.

14. Psychrogeton Boiss.

1 species in Jammu and Kashmir and 1 species in India.
Psychrogeton andryaloides (DC.) Novopokr. ex Krasch.
P. andryaloides DC. var. *dentatus* (Botsch.) Grierson
P. andryaloides DC. var. *poncinsii* (Franch.) Grierson

15. Rhynchospermum Reinw.

1 species in Jammu and Kashmir and 1 species in India.
Rhynchospermum verticellata Reinw.

16. Solidago L.

3 species in Jammu and Kashmir and 4 species in India.
Solidago decurrens Lour.
S. canadensis L.

S. virga-aurea L.

17. Symphyotrichum Nees

2 species in Jammu and Kashmir and 1 species in India.
Symphyotrichum subulatum (Michx.) G. L. Nesom
S. pilosus Willd. var. *demotus* Blake



Fig 2: A, *Bellis perennis* L.; B, *Conyza japonica* (Thunb.) Less. ex DC. ; C, *Conyza canadensis* (L.) Cronq. ; D, *C. sumatrensis* (Ritz.) Walker



Fig 3: A, *Aster acris* L. ; B, *Calotis hispidula* (F. Muell.) F. Muell.

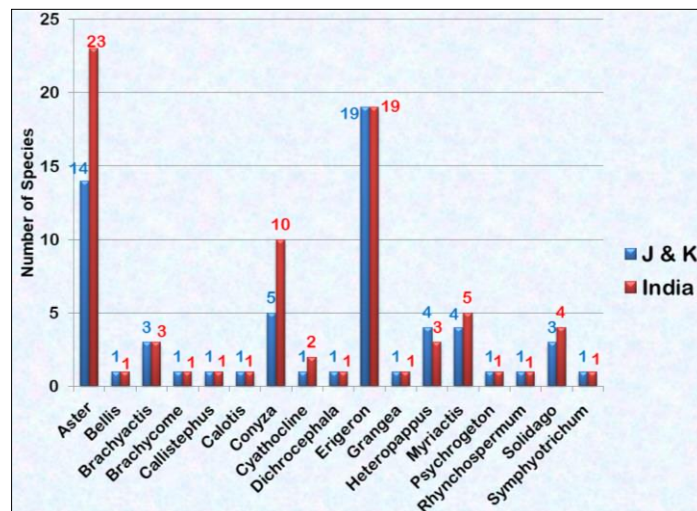


Fig 4: Numerical size of different genera of Tribe Astereae in Jammu and Kashmir

Discussion and Conclusion

Tribe Astereae represents 62 species in Jammu and Kashmir in comparison to 76 species in India. Asteraceae in the Flora of Jammu and Kashmir is quite rich having 85% of the genera and 81.5% of the species in comparison to Indian genera and species respectively. The most dominant genus is *Erigeron* constituting 25% representation in the tribe Astereae of Jammu and Kashmir. Genus *Symphyotrichum* is reported for the first time by the author from the Flora of Jammu and Kashmir as a new record for Indian Flora (Bhellum & Sharma 2010). The numerical size of all the species of tribe Astereae in Jammu and Kashmir in comparison to India is given in Fig. 2.

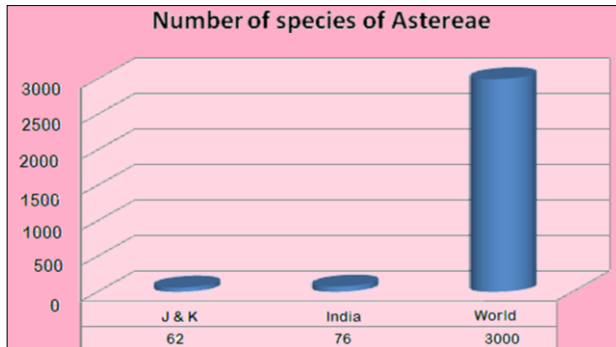


Fig 5: Numerical size of number of species in Jammu and Kashmir (Authors data) India (Hajra *et al.*, 1995) ^[6] and World Bremer, 1994).

Result

The author has compiled the tribe Astereae of Jammu and Kashmir. The genus species ratio is 1: 3.6 in comparison to India which is 3.8 that indicate Jammu and Kashmir being the smaller area of study. Of the 17 genera reported from Jammu and Kashmir, three genera namely *Callistophus*, *Calotis* and *Symphyotrichum* has only been reported from Jammu and Kashmir and nowhere else from other parts of India. In comparison to world species (Fig. 3) of Astereae, 2.53% and 2.06% are found in India and Jammu and Kashmir respectively.

Acknowledgements

The author is grateful to Prof. A. K. Koul, Dean Academics, BGSB. University, Rajouri, J & K, India and Prof. Rani Magotra, Department of Botany, University of Jammu for encouragement.

References

- Bhellum BL, Magotra Rani. A Catalogue of Flowering Plants of Doda, Kishtwar and Ramban Districts (Kashmir Himalaya). Bishen Singh Mahendra Pal Singh, Dehra Dun, 2012.
- Bhellum BL. Endemic Species of Asteraceae in the Flora of Kashmir Himalayas, J & K State, India– Journal of Research in Plant Sciences. 2012; 1:67-70.
- Bhellum BL. Diversity of tribe Anthemideae (Asteraceae) in Flora of Jammu and Kashmir State, 2013.
- Bremer K. Tribe Anthemideae Pp. 435–478. (Bremer ed.) Asteraceae, Cladistics and classification. Timber Press, Portland, Oregon, 1994.
- Dhar U, Kachroo P. Alpine Flora of Kashmir Himalaya. Scientific Publishers, Jodhpur, India, 1983.
- Hajra PK, Rao RR, Singh DK, Uniyal, BP. Flora of India. BSI. Calcutta, 1995, 12.
- Hooker JD. The Flora of British India. Reeve and Co. London, 1872-1897, 1-7.
- Royle JF. Illustrations of the Botany and other branches of natural History of the Himalayan Mountains and of the flora of Cashmere Vol. I & II. London, 1839.
- Sharma BM, Jamwal PS. Flora of Upper Lidder Valleys of Kashmir Himalaya. Jadhpur, 1988, 1.
- Sharma BM, Jamwal PS. Flora of Upper Lidder Valleys of Kashmir Himalaya. Jadhpur, 1998, 2.
- Sharma BM, Kachroo P. Flora of Jammu and plants of neighbourhood Bishen Sing Mahendra Pal Singh Dehra Dun, 1981, 1.
- Sharma BM, Kachroo P. Illustrations to the flora of Jammu and plants of neighbourhood. Bishen Singh Mahendra Pal Singh Dehra Dun, 1983, 2.
- Singh G, Kachroo P. Forest Flora of Srinagar and Plants of neighbourhood. Bishen Singh Mahendra Pal Singh, Dehra Dun, 1976.
- Stewart RR. An Annotated Catalogue of Vascular Plants of West Pakistan and Kashmir In: Nasir, E. and Ali, SI. (eds.) Flora of West Pakistan. Fakhri Pringing Press, Karachi, 1972.
- Swami A, Gupta BK. Flora of Udhampur District. Bishen Singh Mahendra Pal Singh, Dehra Dun, 1998.