

Diversity of tribe Anthemideae (Asteraceae) in flora of Jammu and Kashmir State

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ABSTRACT

Introduction: The present communication deals with tribe Anthemideae comprising of 47 species belonging to 11 genera based on the collections from Jammu and Kashmir State. Many of these species are mostly confined to the alpine zones of Kashmir Himalayas. The relevant data, number of species in Jammu and Kashmir, key to the species, diversity of the tribe anthemideae is indicated under enumeration in each genus.

Material and Methods: The collections were made from the area under study to identify the different genera and species.

Results: The present communication of tribe Anthemideae is first report of its kind from Jammu and Kashmir State comprising of 11 genera and 47 species of the tribe.

Key words: Anthemideae; Asteraceae; Jammu and Kashmir; Himalayas.

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INTRODUCTION

Asteraceae is one of the largest families of the flowering plants having the estimated size comprising of 1314 genera representing 2100 species [1]. Anthemideae is the large tribe of family Asteraceae comprising of 109 genera and ca 1740 species [2]. Asteraceae of Jammu and Kashmir is quite rich. Many of the species are confined to alpine zones. The endemic flora of Asteraceae is dominant. The author has recorded 90 endemic species of Asteraceae from Jammu and Kashmir State [3]. The concentration of species of this family is more in hilly areas than plains. In India this tribe represents as many as 12 genera and 66 species [4]. In Jammu and Kashmir state, the author has studied 11 genera and 47 species of this tribe as enumerated below. Of these 11 genera, 6 species of the genera, namely *Anthemis* L., *Centipeda* Lour., *Chrysanthemum* L., *Leucanthemum* Mill., *Soliva* Ruiz & Pav. and *Waldheimia* are represented by a single species (Fig. 1). The highest number of

species in tribe Anthemideae is found in *Artemisia* L. is 400 in the world, 31 in India and 21 in Jammu and Kashmir (Fig. 2). Many species belonging to tribe Anthemideae of family Asteraceae find their application in therapy of their being high content of pharmacologically action, compounds produced by secretary tissues such as *Matricaria chamomilla* is one of the oldest species of this tribe. Some other species are used mainly as remedies as wild sedative, spasmolytic and pharmaceutical preparations, anti-inflammatory, carminative and also as perfumes and cosmetics [5].

MATERIALS AND METHODS

Field trips were made in Jammu and Kashmir to study flora general and Asteraceae in particular of Jammu and Kashmir State. The relevant data was collected and key characters were studied. Key characters were found very useful in preparation of key to genera of this tribe.

TRIBE: ANTHEMIDEAE

Key to the Genera

- 1 + Receptacles paleaceous; heads usually rayed ----- 2.
- Receptacles naked or with fimbriate pits; heads rayed or disciforma ----- 3.
- 2 + Heads corymbose; achenes margined ----- 1. *Achillea*
- Heads solitary peduncled; achenes 4-5 angled or many ribbed ----- 2. *Anthemis*
- 3 + Heads rayed ----- 4.
- Heads disciform ----- 7.
- 4 + Herbs diffuse; peduncles short; achenes 5-angled ----- 11. *Waldheimia*
- Herbs erect; peduncles long; achense angled or ribbed ----- 5.
- 5 + Annual herbs; achenes ventrally 3- 5 ribbed, dorsally many ribbed or smooth ----- 8. *Matricaria*
- Perennial herbs; achenes ribbed or angled ----- 6.
- 6 + Achenes 3-ribbed; mucilage cells absent ----- 4. *Chrysanthemum*
- Achenes usually prominently 10- ribbed; mucilage cells present ----- 7. *Leucanthemum*
- 7 + Heads many, racemose, penciled or corymbose ----- 8.
- Heads solitary ----- 9.
- 8 + Heads racemose or panicled; involucral bracts few seriate ----- 3. *Artemisia*
- Heads in corymbs; involucral bracts many seriate ----- 10. *Tanacetum*
- 9 + Herbs stoloniferous; heads sessile; corolla of outer florets wanting----- 9. *Soliva*
- Herbs non-stoloniferous; heads usually peduncled; corolla of outer florets usually present ----- 11.
- 10 + Heads sessile or subsessile; involucral bracts 2-serriate; leaves toothed or lobed--- 5. *Centipeda*
- Heads peduncled; involucral bracts sub-2-serriate; leaves pinnatifid or pinnatisect -- 6. *Cotula*

RESULTS

In Jammu and Kashmir, the author has studied 11 genera and 47 species of this tribe as enumerated below. As many as 9.42% species of tribe Anthemideae are endemic to Jammu and Kashmir Himalayas.

ANTHEMIDEAE CHARACTERISTICS

Herbs, subshrubs or shrubs; latex absent; leaves usually alternate, usually variously dissected with characteristic smell; heads various; involucre often hemispheric; bracts 2-7 seriate, imbricate, margin almost scarious; rays of variously coloured, limb 3-lobed; pollen echinate rarely rugose or smooth; style slender, apex truncate, stigmatic surfaces parallel; achenes shapes various; pappus never capillary.

Distribution: South Africa, Central Asia and Mediterranean region.

ENUMERATION

1. *Achillea* L.

200 species approximately; 2 in India and 1 in Jammu and Kashmir: *Achillea millefolium* L.

2. *Anthemis* L.

200 species approximately; 1 in India and 1 in Jammu and Kashmir: *Anthemis cotula* L.

3. *Artemisia* L.

400 species approximately; 32 in India and 21 in Jammu and Kashmir: *Artemisia absinthium* L., *A. amygdalina* Decne., *A. banihalensis* Kaul et Bakshi, *A. biennis* Willd., *A. brevifolia* Wall. ex DC., *A. capillaris* Thunb., *A. cashmirica* Kaul & Bakshi, *A. desertorum* Spreng., *A. dranculus* L., *A. glauca* Pall. ex Willd., *A. japonica* Thunb., *A. laciniata* Willd., *A. maritima* L., *A. nilagirica* (Clarke) Pump., *A. parviflora* Roxb., *A. roxburghiana* Wall. ex Bess., *A. sacrorum* Ledeb., *A. sieversiana* Ehrh. ex Willd., *A. stracheyi* Hk. ex Thoms., *A. vestita* Wall. ex DC., *A. wallichiana* Bess.

4. *Centipeda* Lour.

6 species approximately; 1 in India and 1 in Jammu and Kashmir: *Centipeda minima* (L.) A. Br. & Aschers.

5. *Chrysanthemum* L.

200 species approximately; 4 in India and 4 in Jammu and Kashmir: *Chrysanthemum parthenium* (L.) Berth., *C. pyrethroides* (Kar. & Kir.) B. Fedtsch-Rostit., *C. stoliczkai* Clarke, *C. tibeticum* Hk.f. & Thoms.,

6. *Cotula* L.

75 species approximately; 4 in India and 2 in Jammu and Kashmir: *Cotula anthemoides* L., *C. aurea* Loeffl.

7. *Leucanthemum* Mill.

20 species approximately; 1 in India and 1 in Jammu and Kashmir: *Leucanthemum vulgare* Lam.

8. *Matricaria* L.

60 species approximately; 2 in India and 1 in Jammu and Kashmir: *Matricaria recutita* L.

9. *Soliva* Ruiz & Pav.

12 species approximately; 1 in India and 1 in Jammu and Kashmir: *Soliva anthemifolia* (A. Juss.) R. Br.

10. *Tanacetum* L.

70 species approximately; 12 in India and 9 in Jammu and Kashmir: *Tanacetum artemisioides* Sch.-Bip. ex Hook., *T. dolichophyllum* (Kitam.) Kitam., *T. falconeri* Hk. f., *T. fruticosum* Ledeb., *T. gracile* Hk. f. & Thoms., *T. griffithii* (Clarke) Muradyan, *T. nanum* Clarke, *T. tibeticum* Hk. f. & Clarke, *T. tomentosum* DC.

11. *Waldheimia* Kar & Kir

8 species approximately; 5 in India and 5 in Jammu and Kashmir: *Waldheimia glabra* (Decne.) Regel, *W. nivea* (Hk.f. & Thoms. ex Clarke) Regel, *W. stoliczkai* (Clarke) Ostanf., *W. tomentosa* (Decne.) Regel, *W. vestita* (Hk.f. & Thoms.) Pamp.

DISCUSSION

The family Asteraceae shows a remarkable morphological diversity among angiosperms which ruled over 250 years as a basis on morphology for classification of various tribes. Therefore, in order to know about the tribes of this family, Anthemideae is selected to find out the diversity of species in the flora of Jammu and Kashmir State. The members of Asteraceae exceed over 1314 genera and 2100

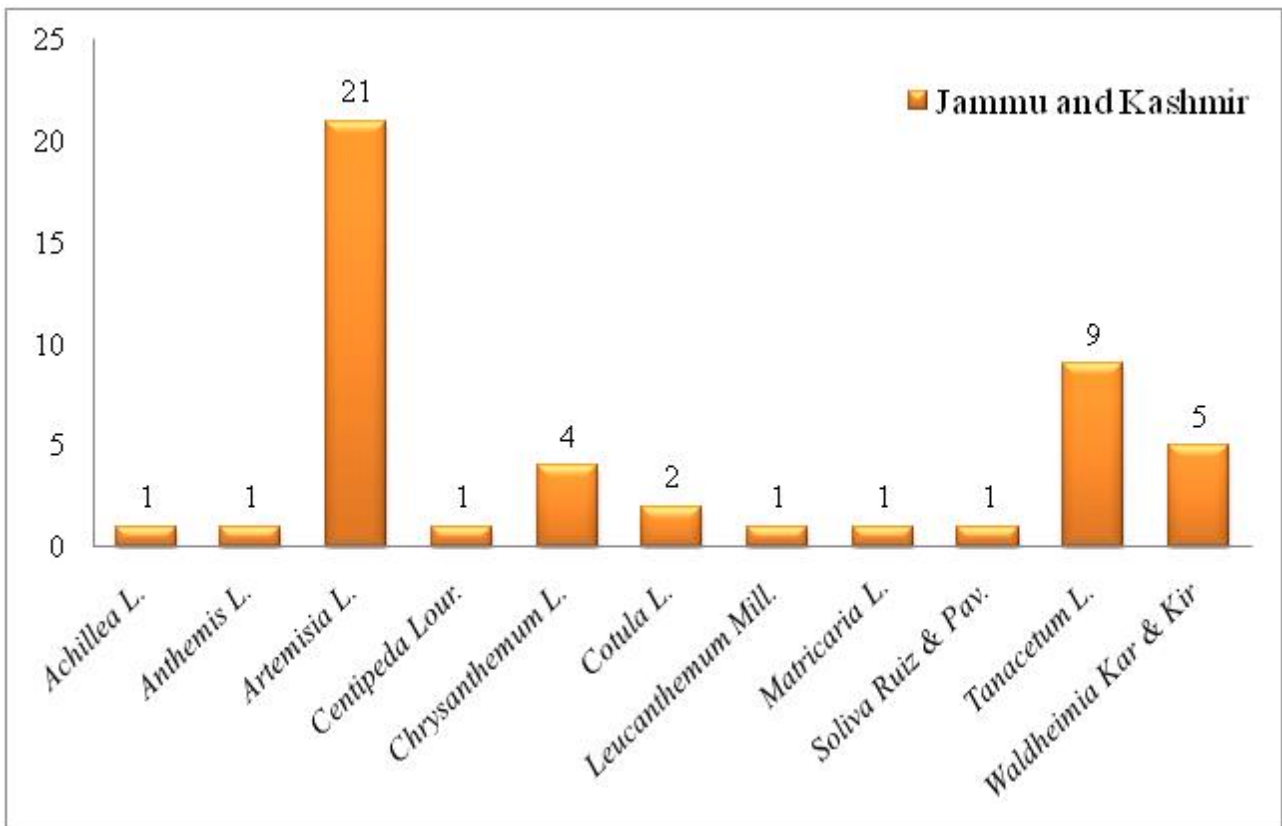


Fig. 1. Bar Graph represents number of species of tribe Anthemideae in Jammu and Kashmir

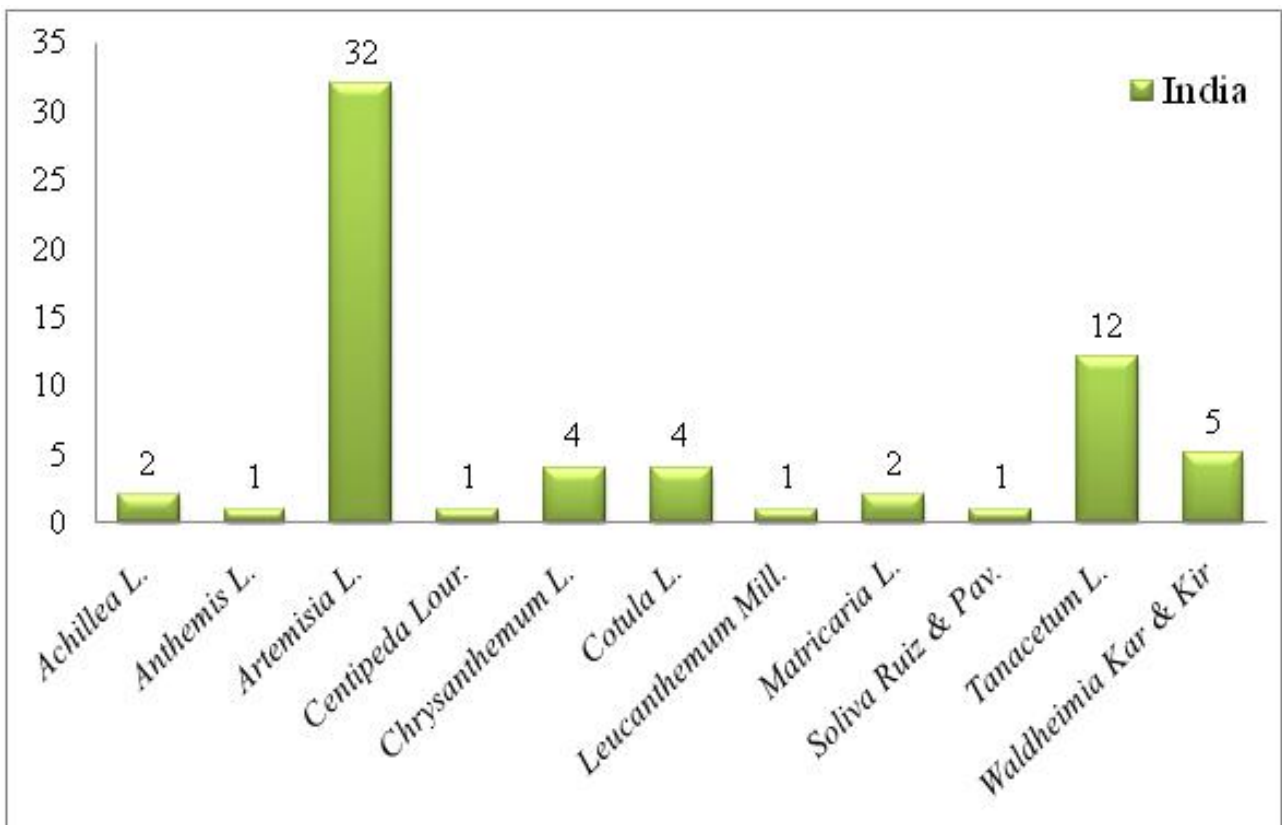


Fig. 2. Bar Graph represents number of species of tribe Anthemideae in India

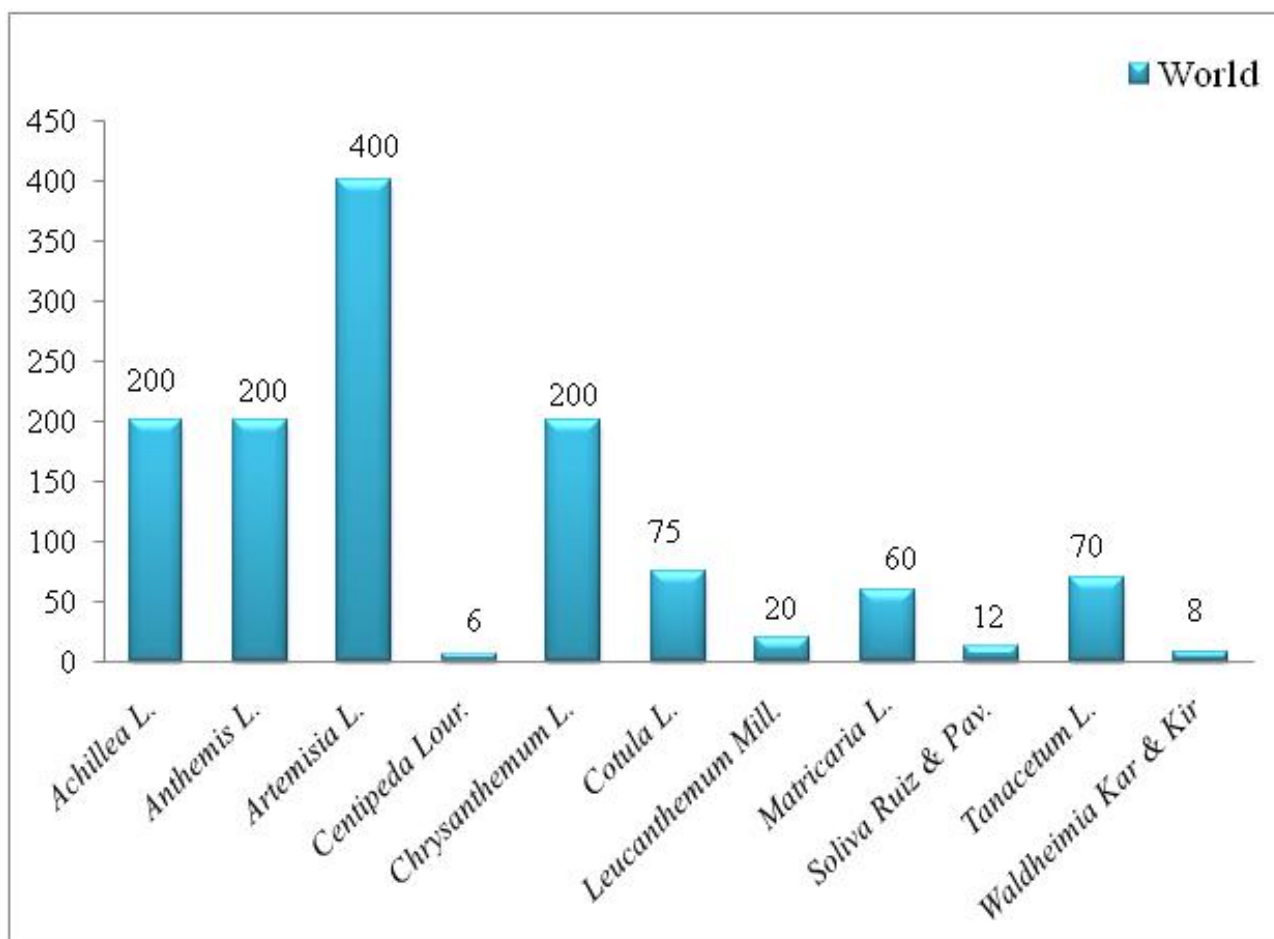


Fig. 3. Bar Graph showing global representation of species under each genus in tribe Anthemideae

species [1]. A single tribe of this family, anthemideae is comprised of 109 genera and 1740 species [2]. While publishing the Flora of India, family Asteraceae [4] described 66 species of the tribe anthemideae belonging to 12 genera from India. The family is of a great economic value and plays a significant role in various ailments [5].

Bhellum [3] enumerated 90 species of Asteraceae endemic to Kashmir Himalayas of Jammu and Kashmir State. The most dominant genus of this tribe in world, India and Jammu and Kashmir State is *Artemisia* L. Of the total 11 genera of tribe Anthemideae in Jammu and Kashmir, 5 genera in India and Jammu and Kashmir viz. *Anthemis* L., *Centipeda* Lour., *Chrysanthemum* L., *Leucanthemum* Mill. and *Soliva* Ruiz & Pav. are represented by a single species. All the 5 species *Waldheimia* (Fig. 2) of Indian flora are found in the flora of Jammu and Kashmir (Fig. 1) which indicates Anthemideae of J & K State is very rich.

As many as 9.42% species of tribe Anthemideae are endemic to Jammu and Kashmir Kashmir

Himalayas. The global representation of 10 genera of this tribe is indicated in bar graph (Fig. 3).

CONCLUSION

Anthemideae comprising of 47 species belonging to 11 genera based on the collections from Jammu and Kashmir State. The author has enumerated 90 species of Asteraceae endemic to Kashmir Himalayas of Jammu and Kashmir.

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TRANSPARENCY DECLARATION

The author declares no conflicts of interest.

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