



## Systematic survey of some angiosperms of family Asteraceae from Kota District of Rajasthan, India

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**ABSTRACT:** The present study deals with vegetation of habitats of Kota district of Rajasthan state. Plant exploration was conducted to determine plants of family Asteraceae from various habitats revealed occurrences of 10 plant species. Taxonomic position of these plant species is described in various available Floras of different regions of the Rajasthan state.

**Key words:** Asteraceae, Angiosperms, Kota.

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### INTRODUCTION

Earlier works on systematic enumeration of South East Rajasthan especially of Kota district have been contributed by Majumdar (1971, 1976 and 1980) in form of Synoptic flora of Kota division. Sharma and Tiagi (1979), Sharma (2002a, 2002b), Sharma and Siringi (1986) are also have made significant contributions. Flora of Rajasthan by N.K. Sharma (Floristic studies on Hadoti region. 2002) provides a vast account of angiosperms. This paper describes systematic survey of some plants of family Asteraceae from the study area.

**Study Area:** Kota district is situated in South of Rajasthan at latitude 30° 39.125' N and longitude 78° 31.156' E. and is located along the eastern bank of the Chambal river. It covers an area of approximately 521324 hectare (12,436 km<sup>2</sup>) and it is 3.63 per cent of the Rajasthan State. Out of which, forests are 125379 hectare, non agriculture land is 60021 hectare and cultivable barren land is 23011 hectare. The Chambal River is natural boundary of Kota district that separates Kota from neighboring Sawai Madhopur, Tonk and Bundi districts by forming the natural district boundary.

**Climate:** Precipitation in Kota is nearly 80% of the mean annual rainfall (1516 mm) occurs during monsoon season between June and September and remaining 20% falls in winter season. Temperature remains cool and pleasant round the year. Overall climate is moderate. Frost is common during winter season. Mean of minimum monthly temperature ranges from 4.7°C (Jan) to 24.2°C (Jul) and mean of maximum monthly temperature ranged from 21.2°C (Jan) to 33.10°C (Jul) in the year 2011.

### MATERIAL AND METHODS

The study on angiosperms of family Asteraceae from Kota district of Rajasthan, India is based on the results obtained from both extensive and intensive studies of the vegetation of area under study. Field survey was carried out for collection of plants. Identification of plant species during field work was done by compiling different floras available i.e. Flora of Rajasthan by N.K. Sharma that deals with Hadoti region (District Kota, Baran and Jhalawar), Flora of Delhi by J. K. Maheshwari, and Flora of Indian Desert by M. M. Bhandari and authenticated at Herbarium, Department of Botany, University of Rajasthan, Jaipur. The photographs of all the ten plant species were taken during field trip.

## RESULTS AND DISCUSSION

Systematic survey of studied plant species is described under (Figure1: (A-J)):

**1. *Cirsium arvense* (Linn.) Scop:** *Cirsium arvense* (Linn.) Scop; Fl. Carn. 2: 126, 1772. Fl. Brit. India 3: 362.1881; Duthie, Fl. Gangetic Plain 1: 481. 1905; Maheshwari, Fl. Delhi. 201, 1963. Maheshwari, Fl. Delhi. 113, 1966. Shetty & Singh Fl. Rajasthan 1: 404. 1987.

Erect, annual, leafy Herb stem 60-100 cm long, branched, Leaves alternate, obovate, acute base, serrate margin tipped with spines, Flowers pink- purple, corolla 5, tubular, bisexual heads ovoidal, covered by bristles, basal placentation, fruits acenes.

Vernacular Name : Brahm dandi, Rissa  
Specimen Examined : SUBHASH/TH /111(GCK)  
Local uses : Stalks are used because of their propensity to induce flatulence in some people. The taproot is considered the most nutritious. The leaves are also edible.

**2. *Grangea maderaspatana* (Linn.) Poir:** *Grangea maderaspatana* (Linn.) Poir in Lam. Encycl. Suppl. 2: 825. 1812. *Artimisia maderaspatana* L. Sp. Pl. 849.1753. Hook. f., Fl. Brit. India 3: 247. 1881; Duthie, Fl. Gangetic Plain 1: 446. 1905; Maheshwari, Fl. Delhi. 196, 1963. Bhandari, Fl. Indian Desert 181. 1978; Sharma and Tiagi Fl. NE Raj. 224, 1979. Shetty & Singh Fl. Rajasthan 1: 417. 1987. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 182, 1996. Sharma, Fl. Raj (Hadoti). 107, 2002. Yadav and Meena, Fl. SC Raj. 200, 2011. .

Prostrate, annual herb, stem 11-65 cm long, branched, Leaves alternate, sessile, pinnatifid broadly ovate to cordate, 3-5 lobed, acute base, serrate- dentate margin, Heads globose, yellow, solitary or paired, involucre bracts, outer ray florets pistillate and filiform, central disc florets bisexual, basal placentation, fruits acenes 2 mm long.

Vernacular Name : Madras carpet  
Specimen Examined : SUBHASH/TH/112(GCK)

**3. *Echinops echinatus* Roxb.:** *Echinops echinatus* Roxb. Fl. Ind. 3: 447. 1832; Hook. f., Fl. Brit. India 3: 358.1881; Duthie, Fl. Gangetic Plain 1: 480. 1905; Maheshwari, Fl. Delhi. 196, 1963; Bhandari, Fl. Indian Desert 214. 1978; Sharma and Tiagi Fl. NE Raj. 224, 1979; Shetty & Singh Fl. Rajasthan 1: 408. 1987; Hajra in Hajra *et al.* Fl. India 13: 178. 1995. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 176, 1996. Sharma, Fl. Raj (Hadoti). 104, 2002. Yadav and Meena, Fl. SC Raj. 197, 2011.

Erect, annual, herb, stem erect, branched, spinulated, Leaves alternate, pinnatifid, lobed, covered with yellow spines, White homogenous heads, globose, solitary, numerous spinulate crowded florets, florets bisexual disc florets only, packed in scales, corolla 5, tubular, covered by bristles, corolla tube white, basal placentation, fruits acenes 4 mm.

Vernacular Name : Oont katili  
Specimen Examined : SUBHASH/TH/113(GCK)

**4. *Eclipta prostrata* (Linn.) Linn.:** *Eclipta prostrata* (Linn.) Linn. Mant. Pl. 2:286.1771; Choudhary *et al.* Fl. India 12: 381. f. 103. 1995. *Verbesina prostrata* L. Sp. Pl. 902. 1753; *Verbesina alba* L. Sp. Pl. 902. 1753. *Eclipta erecta* Linn. Mant. Pl. 2:286.1771; Hook. f., Fl. Brit. India 3: 304.1881; Duthie, Fl. Gangetic Plain 1: 468.1905; Maheshwari, Fl. Delhi. 196, 1963. Sharma and Tiagi Fl. NE Raj. 202, 1979. Shetty & Singh Fl. Rajasthan 1: 409. 1987. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 177, 1996. Sharma, Fl. Raj (Hadoti). 105, 2002. Yadav and Meena, Fl. SC Raj. 198, 2011.

Erect or prostrate, annual, hirsute herb, stem erect/ prostrate 40-60 cm long, branched, Leaves simple opposite, sub sessile, lanceolate, entire, solitary heads, peripheral ray florets 2/3 whorls, ligulate, pistillate, disc florets bisexual, tubular, style branched, basal placentation, Fruits brown acenes.

Vernacular Name : Bhringraj  
Specimen Examined : SUBHASH/TH/114(GCK)  
Local uses : Leaves are used as hair tonic.

**5. *Caesulia axillaris* Roxb.:** *Caesulia axillaris* Roxb. Fl. Cor.1:64. t. 93.1798; Pant in Hajra *et al.* Fl. India 13: 2. f. 1. 1995; Hook. f., Fl. Brit. India 3: 291.1881; Duthie, Fl. Gangetic Plain 1: 462. 1905; Maheshwari, Fl. Delhi. 192, 1963. Bhandari, Fl. Indian Desert 174. 1978; Sharma and Tiagi Fl. NE Raj. 199, 1979. Shetty & Singh Fl. Rajasthan 1: 400. 1987. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 173, 1996. Sharma, Fl. Raj (Hadoti). 102, 2002. Yadav and Meena, Fl. SC Raj. 195, 2011.

Erect, annual, marshy herb. stem 40-100 cm long, branched, Leaves alternate, 4-10 cm long, lanceolate, acute base, entire margin, heads homogenous, axillary, sessile, florets white, numerous crowded florets, florets packed in scales, corolla 5, tubular, staminate; basal placentation, fruits flat acenes.

Specimen Examined : SUBHASH/TH/115(GCK)

**6. *Sphaeranthus indicus* Linn.:** *Sphaeranthus indicus* Linn. Sp. Pl. 927. 1753; Hook. f., Fl. Brit. India 3: 275.1881; Duthie, Fl. Gangetic Plain 1: 459. 1905; Maheshwari, Fl. Delhi. 196, 1963. Bhandari, Fl. Indian Desert 189. 1978; Sharma and Tiagi Fl. NE Raj. 224, 1979. Shetty & Singh Fl. Rajasthan 1: 436. 1987. Kumar in Hajra *et al.* Fl. India 13: 160. f. 117. 1995. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 191, 1996. Sharma, Fl. Raj (Hadoti). 110, 2002. Yadav and Meena, Fl. SC Raj. 203, 2011.

Prostrate, Erect, annual, stem 10-60 cm long, much branched, Leaves alternate, lanceolate, covered with glandular hairs, acute base, wavy margin, heads spherical globose, compound, pink/pinkish, homogenous, disc florets only, bisexual, corolla 5, tubular, basal placentation, fruits acenes.

Specimen Examined : SUBHASH/TH/116(GCK)

**7. *Xanthium indicum* Koen.ex Roxb.:** *Xanthium indicum* Koen. Ex. Roxb., Fl. Ind. 3.610. 1832; Choudhary in Hajra *et al.* Fl. India 12: 427. f. 123. 1995. *Xanthium stumarium* L. Sp. Pl. 987. 1753, *pro parte*; Hook. f., Fl. Brit. India 3: 309.1881; Duthie, Fl. Gangetic Plain 1: 472. 1905; Maheshwari, Fl. Delhi. 196, 1963. Bhandari, Fl. Indian Desert 214. 1978; Sharma and Tiagi Fl. NE Raj. 224, 1979. Shetty & Singh Fl. Rajasthan 1: 443. 1987. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 195, 1996. Sharma, Fl. Raj (Hadoti). 112, 2002. Yadav and Meena, Fl. SC Raj. 205, 2011.

Erect, annual, stem 20-100 cm long, branched, Leaves alternate, broadly ovate to cordate, 3-5 lobed, acute base, serrate margin, Male heads globose, numerous crowded florets, florets packed in scales, corolla 5, tubular, staminate; Female heads ovoidal, covered by bristles, florets 2, corolla absent, pistillate, basal placentation, fruits acenes.

Vernacular Name : Adhasisi, Chirchitta

Specimen Examined : SUBHASH/TH/117(GCK)

Local uses : Fruits smoked through stem of *Calotropis procera* for treatment of "Adhasisi."

**8. *Gnaphalium pulvinatum* Delile:** *Gnaphalium pulvinatum* Delile. Fl. Aegypt. 122. t. 44. f. 1812. Hook. f., Fl. Brit. India 3: 289.1881; Duthie, Fl. Gangetic Plain 1: 462. 1905; Bhandari, Fl. Indian Desert 180. 1978; Sharma and Tiagi Fl. NE Raj. 209, 1979. Shetty & Singh Fl. Rajasthan 1: 416. 1987. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 180, 1996. Sharma, Fl. Raj (Hadoti). 106, 2002. Yadav and Meena, Fl. SC Raj. 200, 2011.

Prostrate, annual, herb, woolly, stem 20-30 cm long, branched, Leaves alternate, abovate, acute base, obtuse apex, entire margin, heads crowded, sub-globose, yellow, ray florets female, ligulate, disc florets bisexual, florets packed in scales, corolla 5, tubular, basal placentation, Fruits acenes.

Specimen Examined : SUBHASH/TH/118(GCK)

**9. *Sonchus asper* (L) Hill.:** *Sonchus asper* (L) Hill. Herbs. Brit. 1:47. 1769; Hook. f., Fl. Brit. India 3: 414.1881; Duthie, Fl. Gangetic Plain 1: 493. 1905; Maheshwari, Fl. Delhi. 191, 1963. Bhandari, Fl. Indian Desert 189. 1978; Sharma and Tiagi Fl. NE Raj. 217, 1979. Shetty & Singh Fl. Rajasthan 1: 435. 1987. Rao in Hajra *et al.* Fl. India 12: 318. f. 82. 1995 Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 189, 1996. Sharma, Fl. Raj (Hadoti). 110, 2002. Yadav and Meena, Fl. SC Raj. 202, 2011.

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Erect, annual, herb, stem 20-80 cm long, branched, Leaves alternate, pinnatifid, articulated base, acute apex, sharply spinous dentate, Cymose heads, umbrella like, elongated, numerous florets, florets packed by involucre, yellow, ray florets female, ligulate, disc florets bisexual, florets packed in scales, corolla 5, tubular, basal placentation, fruits acenes.

Vernacular Name : Peeli doodhi  
Specimen Examined : SUBHASH/TH/119(GCK)

**10. *Ageratum conyzoides* Linn.:** *Ageratum conyzoides* Linn. Sp. Pl. 1753; Hook. f., Fl. Brit. India 3: 309.1881; Duthie, Fl. Gangetic Plain 1: 99. 1905; Maheshwari, Fl. Delhi. 190, 1963. Bhandari, Fl. Indian Desert 214. 1978; Sharma and Tiagi Fl. NE Raj. 194. 1979. Shetty & Singh Fl. Rajasthan 1: 390. 1987. Uniyal in Hajra *et al.* Fl. India 12: 248.1995. Prashad, Mason, Marburger and Kumar, Ill. Fl. Keoladev NP Bharatpur, 166, 1996. Sharma, Fl. Raj (Hadoti). 100, 2002. Yadav and Meena, Fl. SC Raj. 192, 2011. Erect, annual, herb, stem 20-80 cm long, much branched, Leaves opposite, petiolated, ovate to cordate, acute base, acute apex, serrate margin, heads purple/ blue, small terminal corymb, based by involucre, globose, numerous crowed florets, florets packed with scales, corolla 5, tubular, basal placentation, fruits linear acenes.(Cysels)

Specimen Examined : SUBHASH/TH/120(GCK)



A:- *Cirsium arvense* (Linn.) Scop., B:- *Grangia maderaspatana* (Linn.) Poir C:- *Echinops echinatus* Roxb., D:- *Eclipta prostrata* (Linn.) Linn., E:- *Caesulia axillaris* Roxb.



F:- *Sphaeranthus indicus* Linn G:- *Xanthium indicum* Koen. ex Roxb. H:- *Gnaphalium pulvinatum* Delile I:- *Sonchus arvensis* Linn. J:- *Ageratum conyzoides* Linn.

**Figure 1(A-J): Asteraceae**

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