

Distribution Patterns of *Acmella paniculata* (Wall. Ex DC.) R. K. Jansen in Gujarat, India

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Abstract: *Acmella paniculata* (Wall. Ex DC.) R. K. Jansen commonly known as “Akarkara” or “toothache plant” is an important medicinal herb of Asteraceae occurring in the tropics and subtropical parts of the world. “Akarkara” is of great medicinal value because of a rich source of bioactive compound known as spilanthol. Due to this compound, the plant has immense application in pharmaceuticals, food, health and body care products. In India, the plants have been growing in the northern and southern hills and plateaus. It is distributed in Andhra Pradesh, Assam, Kerala, Karnataka, Meghalaya, Madhya Pradesh, Rajasthan and Tamil Nadu. Present study deals with the distribution of *Acmella paniculata* (Wall. Ex DC.) R. K. Jansen in Gujarat state. In Gujarat, *Acmella* has been found in Sabarkantha, Banaskantha, Dahod, Panchmahal, Chota-udepur, Narmada, Bharuch, Surat, Tapi, Valsad, Navsari and Dangs. This study will give the clear idea about its habitat and distribution.

Keywords: *Acmella paniculata*, medicinal, distribution, habitat, Gujarat

1. INTRODUCTION

In 1760, Jacquin was first to describe *Spilanthes* with two species, *Spilanthes incipida* and *S. urens*. After that Richard in 1807 described *Acmella* as a genus of five species that differ from species of *Spilanthes* in having ray florets and lack of pappus. Cassini (1822) suggested that *Acmella* might be treated better as a section within *Spilanthes*. In 1836, De Candolle followed Cassini's suggestion and recognized two sections, namely sect. *Salivaria* DC. And sect. *Acmella* (Rich.) DC. Moore (1907) in his revision of the genus *Spilanthes* described section *Salivaria*, with 13 species and section *Acmella*, with 26 species. Jansen (1981) provided convincing evidences for the recognition of *Acmella* and *Spilanthes* as distinct genera based on morphological, chromosomal and molecular evidences. He characterized *Spilanthes* with stiff awned pappus, monomorphic achenes, sessile leaves, discoid heads and white to purplish-white corolla. On the other hands, *Acmella* consists of soft pappus bristles, dimorphic achenes, petiolate leaves, radiate and discard heads and usually orange-yellow to yellow or

occasionally white corolla. Jansen (1985) transferred some of the taxa from *Spilanthes* to *Acmella* and finally recognized 30 species and 9 infraspecific taxa in *Acmella* (Reshmi *et. al.*, 2016).

Acmella paniculata (Wall. Ex DC.) R. K. Jansen belongs to family Asteraceae. It is commonly known as “toothache plant” because of its wide use by tribals to cure toothache and gum infections. In Gujarati is known as ‘Marethi’, in Konkani and Marathi it is known as ‘Akkalkaro’ and in Nepali it is known as ‘Laato ghans’. The genus *Acmella* (*Spilanthes*) has more than 30 species, generally occurring in the tropics and subtropical parts of the world (Reshmi *et. al.*, 2016). It is native to the Bangladesh, Brazil, China, Colombia, Ecuador, India, Indonesia, Nepal, Papua, New Guinea, Peru, Solomon Islands, Sri Lanka, Taiwan, Province of China, Thailand and Viet Nam. In India, these species have been growing in the northern and southern hills and plateaus. In India, it is distributed in Andhra Pradesh, Assam, Chattisgarh, Goa, Gujarat, Himachal Pradesh, Kerala, Karnataka, Meghalaya, Maharashtra, Madhya Pradesh, Rajasthan

and Tamil Nadu (Cook, 1996). Six species reported from the genus *Acmella* in India are, *A. ciliata*, *A. oleracea*, *A. paniculata*, *A. radicans*, *A. unguillosa* and *A. calva* (efloraofindia, 2007 onwards).

DESCRIPTION

Acmella Persoon, Syn.Pl 2:472. 1807

Herbs, annual or perennial. Leaves opposite and/or basally rosulate. Capitula solitary or in few-headed cymes, radiate, disciform, or discoid. Involucres \pm hemispheric to ovoid; phyllaries 1-3-seriate, subequal or with outer row spreading and longer, entire or irregularly dentate; receptacles conical; paleae falling with achene, \pm navicular, membranous to scarious, each \pm equaling subtended floret. Ray florets, when present, 2- or 3-lobed, variously colored. Disk florets: corolla yellow or orange, 4- or 5-lobed. Achene margin ciliate, glabrous, or sometimes corky; ray achenes broadly ovate or elliptic, 3-angled; disk achenes ellipsoid, strongly compressed; pappus absent or of up to 10 awnlike bristles.

Acmella paniculata (Wall. ex DC.) R.K.Jansen Syst. Bot. Monogr. 8 67 1985.

Herbs, annual. Stems branched, erect or ascending, to 30 cm or more tall, rarely rooting at nodes. Petiole 1-2 cm; leaf blade ovate to ovate-lanceolate, 2-4 \times 1-2.5 cm, 3-veined, base cuneate, margin entire or coarsely or crenately serrate, apex acute. Capitula discoid, solitary, terminal or axillary, 8.4-12.5 \times 6.9-10 mm; peduncles 2.5-16 cm, sparsely pilose; phyllaries 9-12, 2-seriate, ovate-lanceolate, ca. 6 mm, herbaceous, glabrous; receptacle 5-8 \times 1.1-3 mm, apex acuminate. Florets 90-200; corollas tubular, minute, 4- or 5-lobed. Achenes obovoid, 3-angled, ca. 3 mm, margin scabrid, apex slightly depressed; pappus of 2 subequal bristles, longer one 0.5-1.1 mm, shorter one 0.4-0.9 mm.

Flowering – fruiting: - October to April

2. IMPORTANCE AND UTILIZATION

Acmella paniculata has been utilized by tribes in all over the world. Because of its edible value it has been used as food by ancient time. Its

leaves and flowers are edible. Fresh leaves are used in making salads. The leaves may also use to treat bacterial and fungal skin diseases. Flowers are used to cure tooth-ache and gum infections. Chewing the heads relieves toothache or a tincture made from the flower heads and applied in some lint to the teeth and gums is even more effective against toothache. In ancient time it has been used as medicine for treatment of many diseases like, rheumatism, cold and fever, purgation, urinary tract infection, pulverization of kidney, gall stones and remedy for stammering in children. *Acmella* is a great source of bioactive compound spilanthol. Due to this compound, the plant has immense application in pharmaceuticals, health and body care products.

3. DISTRIBUTION IN GUJARAT

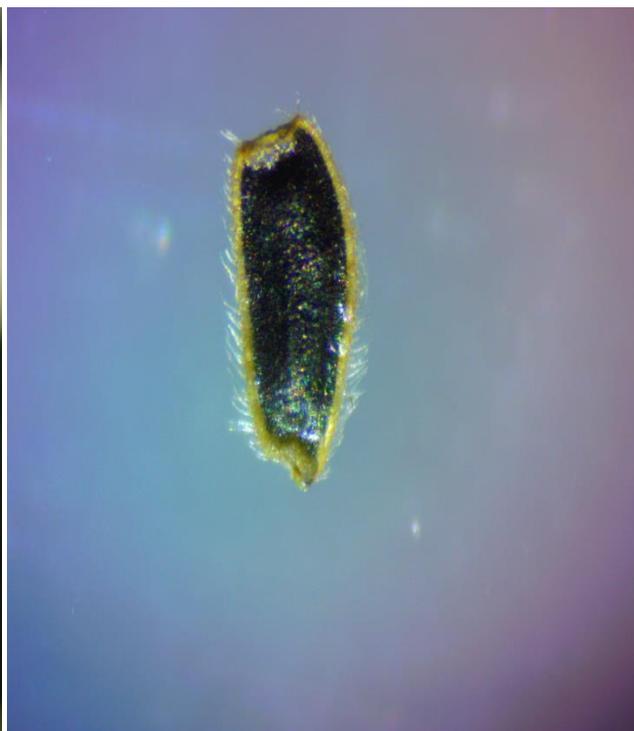
Gujarat has divided into five biogeographical regions, namely South Gujarat, Central Gujarat, North Gujarat, Saurashtra and Kachchh. *Acmella paniculata* is commonly found from all the districts of South Gujarat namely Bharuch, Narmada, Surat, Tapi, Navsari, Valsad and Dangs. In Central Gujarat it is frequently seen from Dahod, Panchmahal and Chota-udepur districts. In North Gujarat it is reported from Sabarkantha and Banaskantha districts only. It is not reported from Saurashtra and Kachchh regions. Bhole and Pathak (1988) and Shah G.L. (1978) have reported *Acmella* from Junagadh and beyt dwarka region of Saurashtra but in recent study it is not found from these regions.

4. HABITAT

Acmella paniculata generally found along fresh water habitats like, Rivers, streams, lakes, ponds, marshes, swamps etc. It also found in harvested paddy fields, sugar cane fields and waste wetlands. It usually grows associated with some other species like, *Acmella radicans*, *Polygonum glabrum*, *Alternanthera polygonoides*, *Alternanthera sessilis*, *Synedrella nodiflora*, *Cyperus spp.*, *Scirpus spp.*, *Ipomoea carnea*, *Blumea spp.*, *Cyathocline purpurea*, *Spearanthes indicus*, *Eclipta prostate*, *Marsilea sp.*, *Hygrophilla schuli*, *Eragrostis spp.*, *Ammania baccifera* etc.



A. Whole young plant



B. Achene



C. Dehisced flower



D. Flower

Fig: 1 Photographic images of *Acemella paniculata* (Wall. Ex DC.) R.K.Jansen

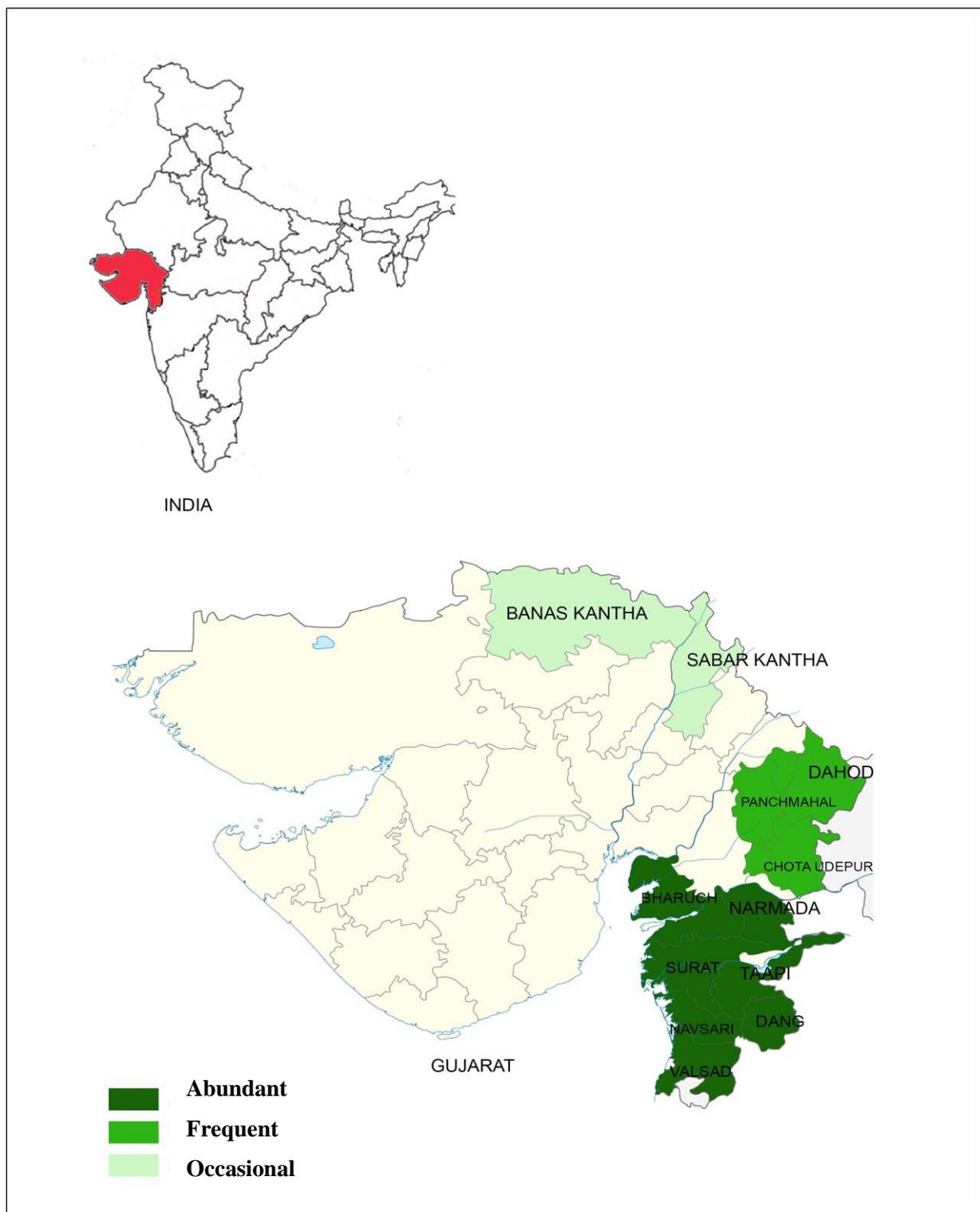


Fig: 2 Map showing distribution of *Acmella paniculata* (Wall. Ex DC.) R.K.Jansen in Gujarat, India



Fig: 3 Different habitats of *Acmella paniculata* (Wall. Ex DC.) R.K.Jansen

5. CONCLUSION

Acmella paniculata found abundantly in all districts of South Gujarat because of its favorable habitat and optimum rainfall. It is moderately distributed in districts of central Gujarat. In Central Gujarat it is reported from Banaskantha and Sabarkantha. It is not found in Saurashtra region because of its dry and scrubby habitat. It is also not found in Kuchchh because of high levels of salinity in the soil. Present study concludes that the

distribution pattern of *Acmella paniculata* strongly relies on habitat, soil, and rainfall.

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