

Short communication

***Acmella radicans* (Jacq.) R.K. Jansen (Asteraceae) - a new angiosperm record for Bangladesh**

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A floristic survey was conducted throughout the Pablakhali Reserve Forests of Rangamati district of Bangladesh from May, 2014 to December, 2015. During this survey the representative specimens of almost all vascular plants available in this virgin forest were collected. After the critical taxonomic studies on the specimens of the family Asteraceae, few were finally identified as *Acmella radicans* (Jacq.) R.K. Jansen, which has been reported here as a new angiospermic record for Bangladesh.

The genus *Acmella* Rich. ex Pers., first described by Richard (1807), was previously considered as *Spilanthes* sect. *Acmella* (Rich. ex Pers.) DC., one of the two sections of the genus *Spilanthes* Jacq. belonging to the family Asteraceae (Compositae) under the tribe Heliantheae and the sub-tribe Ecliptinae based mainly on the nature of the head. *Spilanthes* sect. *Spilanthes* was recognized with radiate heads and *Spilanthes* sect. *Acmella* with discoid heads (Cassini, 1822; De Candolle, 1836; Moore, 1907). Later on, the comparative morphological and chromosomal evidences suggested for the recognition of *Acmella* Rich. ex Pers. and *Spilanthes* Jacq. as distinct genera (Jansen and Stuessy, 1980; Jansen, 1981), which was endorsed by Pruski (1997), Flora of China Editorial Committee (2011) and Davidse *et al.* (2016), though these two genera are also viewed as taxonomically confusing (Paulraj *et al.*, 2013). The detailed systematics of *Acmella* was published by Jansen (1985) who distinguished the genus *Acmella* from *Spilanthes* by its certain morphological characters, *viz.*, petiolate leaves, radiate heads and dimorphic achenes without distinct corky margins at maturity. The genus *Acmella* comprises 30 species including nine infraspecific taxa that are mainly distributed in the tropical and subtropical regions around the world (Jansen, 1985; Mabberley, 2005; Das, 2013). The genus is native to the Americas and introduced in Asia, Africa, Pacific Islands and Australia.

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The genus *Acmella* of Bangladesh has been incautiously described as *Spilanthes* (e.g., Khan 1992; Ahmed *et al.*, 2008; Rahman *et al.*, 2008) even after its recognition as a distinct genus by Jansen and Stuessy (1980) and Jansen (1981; 1985). The three species of *Spilanthes*, viz., *Spilanthes culva* DC, *S. oleracea* L. and *Spilanthes paniculata* Wall ex. DC described from Bangladesh (Khan 1992; Ahmed *et al.*, 2008; Rahman *et al.*, 2008) were synonymized under *Acmella calva* (DC.) R.K. Jansen (Syn.), *Acmella oleracea* (L.) R.K. Jansen (Syn.) and *Acmella paniculata* (Wall. ex DC.) R.K. Jansen (Syn.), respectively.

The species *Acmella radicans*, commonly known as ‘White spot-flower plant’, is native to Central and South America and widespread in New and the Old world tropics or warm climate areas around the world (Sivarajan & Philip, 1984; Stevens *et al.*, 1998; Raja *et al.*, 2013). This species or its basionym *Spilanthes radicans* Jacq. has never been reported from the floristic area covering the present territory of Bangladesh by any literature before (viz. Hooker, 1879; Prain, 1903; Heinig, 1925; Raizada, 1941; Khan & Banu, 1969; Khan, 1992; Pasha & Uddin, 2013; Rahman *et al.*, 2015 etc.; Ahmed *et al.*, 2008; Rahman *et al.*, 2008), though it has been reported from several areas of India (e.g., Sivarajan and Philip, 1984; Bhowmik *et al.* 2013; Raja *et al.*, 2013; Jagtap & Bachulkar, 2015; Patel *et al.*, 2015). In this study, *Acmella radicans* (Jacq.) R.K. Jansen has been reported for the first time from Bangladesh following a critical taxonomic investigation on the specimens of Asteraceae collected from the ethnic homestead area of Parachara hill of Pablakhali Reserve Forest belonging to Rangamati district and relevant literatures. The specimens are presently housed at Jahangirnagar University Herbarium (JUH), Savar, Dhaka, Bangladesh. The detailed description and illustration of the species based on herbarium material are given below.

***Acmella radicans* (Jacq.) R.K. Jansen**, Syst. Bot. Monogr. 8: 69-70, f. 18 (1985). *Spilanthes radicans* Jacq. Collect. Bot. Chem. Hist. Nat. 11(3): 1714 (1804). *Ceratocephalus exasperatus* (Jacquin) Kuntze, Revis, gen. pl. 1: 326 (1891). –TYPE: Venezuela. Collector unknown (holotype not located; the illustration, t. 584, in Jacquin's later work, *Icones plantarum rariorum*, vol. 3, 1792, fixes the application of this name; Jansen 1985:69). *Acmella debilis* (Kunth) Cass. (1822) and *Spilanthes debilis* Kunth. (1820). (Photograph 1 and Fig. 1).

Erect herbs, 30 to 90 cm tall. Stems terete, minutely pubescent, with few ascending branches. Leaves simple, opposite; petioles 1-2.5 cm long, sparsely pubescent; leaf blades 1-7 × 0.5-3.5 cm, 3-nerved, ovate to widely oblong, abaxially and adaxially isolatedly puberulous to pubescent, apically acute, basally obtuse, marginally dentate or serrate and minutely ciliate. Heads few to many, axillary or terminal, 8-12×4-6 mm, white, discoid, usually cone-like, occasionally sub-globose, turning elongate-ovoid at maturity; peduncles 1.5-7 cm long, sparsely pubescent; receptacles columnar or spindle-shaped, glabrous, 5-7 mm long, slightly ciliate at the apex. Involucral bracts two-seriate; bracts of outer series 6, 4-5.5 mm long, 4-5 nerved, broadly ovate, green, marginally ciliate, apically obtuse, adaxially sparsely puberulous to pubescent; bracts of inner series 4-5, 3.5-4.5 mm long, 3-nerved, pale green, widely linear to narrowly oblong, scabrid,

marginally ciliate, apically subulate-obtuse. Flowers per head numerous, discoid, hermaphrodite. Corollas 4-lobed, rarely 5-lobed, 0.75-1 mm long, white to greenish white; corolla tubes 1.5-2 mm long, papillose, base bulbous; corolla lobes 1-1.25×1-1.4, ovate, spreading, glabrous, marginally entire, apically obtuse. Styles 1-1.5 mm long, arms short, truncate, densely papillose. Stamens 4, 1.5 mm long, syngenesious, anthers 0.5-0.6 mm long, brown-black, filaments 0.9-1 mm long.



Photograph 1. *Acmella radicans*

Pappus of 2-3, 1.25-1.5 mm long bristles, persistent. Achenes 2-2.5×1 mm, black, dimorphic, marginal ones trigonous, inner ones laterally compressed or flattened, ellipsoid, obcordate, without evident cork-like margin, outer surface excluding the margins glabrous or sparsely covered with few tuberculae, margins stramineous and ciliate, brownish-black, with straight-tipped 1-1.5 mm long hairs, inner bracts partially covering the achenes numerous, 2.25-2.75 mm long, boat-shaped, semi-transparent, light-brown.

Flowering and Fruiting: August-January.

Ecology: In shady waste place, along road-side habitats, growing in association with *Acmella culva*, *Ageratum conyzoides* L., *Alternanthera sessilis* (L.) R. Br. ex Roem. & Schult., *Axonopus compressus* (Sw.) P. Beauv., *Cynodon dactylon* (L.) Pers., *Eleusine indica* (L.) Gaertn. and *Paspalum longifolium* Roxb. etc.



Fig. 1. *Acmella radicans*: (a) a flowering branch, (b) a head, (c) a receptacle with outer bracts, (d) a flower, (e) stamens (f) a style, (g) a corolla, (h) a laterally compressed achene, (i) an outer involucre bract, (j) an achene-covering inner bract, (k) a trigonal achene

Propagation: Through seeds and stem cutting.

Distribution: Native in Central and South America and becoming widespread (Hyde *et al.*, 2016).

Representative specimen examined: Rangamati: Pablakhali Reserve Forest, Parachhara, 25.12.2015, *G.M. Hossain GMH-1103* (JUH); *M.A. Rahim MAR-3007* (JUH).

Notes: The specimens of *Acmella radicans* (Jacq.) R.K. Jansen examined and its population found in the study area belongs to the variety *A. radicans* (Jacq.) R.K. Jansen var. *radicans*. This variety is distinct from another variety of the species *A. radicans* var. *debilis* (Kunth) R.K. Jansen by its discoid heads and achenes usually without evident corky margins at maturity in contrast to radiate heads and evident corky margins of achenes of *A. radicans* var. *debilis* (Jansen, 1985; Jagtap *et al.*, 2015).

Acmella var. *radicans* seems similar to and often confused with *Acmella paniculata* from which it is distinctive by its axillary or terminal cluster of 2-3 heads, 4-merous white florets, and achenes lacking an evident corky margin at maturity and with or without a few tuberculae on the surfaces. In contrast, *A. paniculata* has solitary terminal or axillary heads, usually 5-merous, sometimes 4-5-merous yellow florets, and mature achenes with an evident cork-like margin and moderately to densely tuberculate surfaces.

Uses: *Acmella radicans* produces at least seven alkaloids (Cortez-Espinosa *et al.*, 2011). The uses of the *Acmella radicans* in traditional medicine can be generally summarized as follows: (a) relieve toothache and affections of throat and gums as well as to paralyse the tongue; (b) flower heads are known as a popular remedy for stammering children. A tincture made from the flower heads is also substituted for a tincture of pyrethrum for the treatment of inflammation in the jaw-bone; (c) seeds are regarded as a stimulant and sialagogue common cold, fever, and cough; (d) whole plant is boiled in water and the liquid as well as the solid are administered against dysentery; (e) a decoction is used as a diuretic and lithotriptist agent and employed as a bath against rheumatism, but also as a lotion against scabies and psoriasis; (f) juice of the plant is effective as a vulnerary and the pounded herb as a poultice to dress wounds and (g) roots are used in several parts of India as a purgative, while the whole plant is a fish poison (CSIR, 1982; Rios-Chavez *et al.*, 2003).

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