

A NEW NAME IN PTEROCEPHALUS (CAPRIFOLIACEAE) FROM KURDISTAN-IRAQ

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Received: Nov., 2020 / Accepted: Dec., 2020 / Published: Dec., 2020

<https://doi.org/10.25271/sjuoz.2020.8.4.722>**ABSTRACT:**

Pterocephalus tetraflorus S. E. Shahbaz, nom. nova, is proposed as a new name for *Pterocephalus strictus* Boiss. et Hohen, described by Boissier in 1843, followed by Shahina and John in 2013. The description of *P. tetraflorus* is amended with characters of mature flowers and achenes, illustrated and its diagnostic characters, geographical distribution and habitats are presented. The species *P. tetraflorus* is closely related to *P. strictus*, but can be easily separated by forming only four-flowered capitula against numerous flowered-capitula for *P. strictus* and other *Pterocephalus* species.

KEYWORDS: *Pterocephalus strictus*, Involucre, Involucel, Plumose calyx, New name.**1. INTRODUCTION**

The Caprifoliaceae of the order Dipsacales is a family consisting of about 860 species (The Plant List, 2013, Version 1.1), in 42 genera. The family is of worldwide distribution, with the Centers of diversity in eastern North America and eastern Asia (Nicolson, 1991), but are absent from tropical and southern Africa. The broad sense of the family (Caprifoliaceae s.l.) is separated into 6 subfamilies: Dipsacoideae, Diervilloideae, Caprifolioideae s.l., Linnaeoideae, Morinoideae, and Valerianoideae. The subfamily Dipsacoideae is classified to contain genera: *Pterocephalus*, *Cephalaria*, *Dipsacus*, *Knautia*, *Scabiosa*, *Succisa*, *Succisella*, and *Triplostegia* (Sevens, 2001).

The most important genera of Iraq are *Pterocephalus* Vaill. ex Adans., *Cephalaria* Schrad. ex Roem. & Schult., *Dipsacus* L., *Scabiosa* L., and *Lonicera* L.. The latter genus is represented by the very widely distributed small tree or shrub *Lonicera arborea* Boiss. in the mountains of Kurdistan.

Pterocephalus Vaill et Adanson is a genus of about 25 herbs and shrubs species from the Mediterranean to Central Asia, the Himalayas, and tropical Africa (Kriechbaum and Kletter, 2001). The genus has long been regarded as belonging to the Dipsacaceae, but according to APG III (2009), the genus is included within the larger family Caprifoliaceae (Reveal and Chase, 2011).

The calyx is the most easily observable diagnostic character of *Pterocephalus*; it is formed by numerous plumose bristles, but the presence of this character in some other genera such as in *Pseudoscabiosa* gives the impression of heterogeneity and made Verlaque (1986a, 1986b) suggest four separate phylogenetic lines within the *Pterocephalus* genus.

Four *Pterocephalus* spp. (*P. pyrethriiform* Boiss. et Hoh. *P. plumus* (L) Coult. *P. kurdicus* Vatk. and *P. canus* Coult. ex DC.) are deposited in BAG (National Herbarium of Iraq). The same above mentioned 4 species were registered from Hawraman mountain track/ Sulaimani/Iraq (Ahmad, 2013).

In Flora of Turkey and the East Aegean Island, Davis (1972) referred to the presence of the following taxa of the Dipsacaceae in mountains of Kurdistan-Iraq, sharing flora of

Turkey: *P. pyrethriiform*, *P. plumus*, *P. kurdicus*, *P. strictus* Boiss. et Hoh., *P. brevis* Coult., *P. szovitsii* Boiss. Only *P. kurdicus*, *P. brevis*, and *P. canus* species are found to share both floras of Turkey and Iran as Irano-Turanian elements.

In the recent volume of Flora of Iraq, Shahina and John (2013) described 9 *Pterocephalus* taxa including *P. strictus*, growing mostly on rocky mountainsides, on grey soil with sandstone and limestone rocks, among *Quercus* scrubs, on dry silt and stony hillsides, at the altitudinal range of 180-1800m.

2. MATERIALS AND METHODS

During the past three years, the university of Duhok/Herbarium conducted an extensive floristic survey in Bykhair Mountain track, which is part of the Zagros Mountain range, overlooking Duhok and Zakho cities and occupying an area of about 1000 km² between 36° 51' 58.634" to 37° 06' 44.256" N and 042° 40' 23.886" to 043° 05' 49.846" E. the Bykhair mountain botanical survey yielded some novelties to the flora of Iraq including the current species .

The species with the new name was compared with all *Pterocephalus* specimens in Iraqi herbaria. Floras of Iraq (Shahina and John, 2013) and of the neighboring countries (flora of Turkey, Davis, 1972; flora of Iran, Rechinger, and 1963–2005) were consulted. The plant was found in locations shown in Figure 1. Morphological measurements for the description of the taxon were obtained from the living material collected from the field.

2.1 Species description

Plants shrubby, viscid perennials, 12- 24 cm tall, mostly semi-global in outline, 20-60 cm long, and 15-55cm broad, densely furnished throughout by short glandular and long eglandular hairs. Stem woody, much-branched from the base, ascending-prostrate, provided by whitish scales. Leaves are glandular-pubescent, leathery, and viscid on both surfaces, exstipulate, crowded at the upper part of the twig, highly variable in shape;

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petioles leafy, slender with a slightly flattened base. Lower leaves pinnatisect, few are simple, with slightly longer petioles, mostly soon caducous; lobes 2-5, some with larger terminal lobes; blade 15.46-27.73(-38) mm long, 6.15-12.48mm wide; petioles 3.1-18.83mm long, 0.4-1.5mm thick. Upper leaf blade obovate, elliptic, ovate-lanceolate, 11.61-23.74 mm long, 4.96-11.75mm width, sometimes slightly asymmetric; margins coarsely, irregularly serrate; apex acute; base attenuate to narrowly attenuate; midribs distinctly raised from below; petioles 4.12-17.36 long, 0.45-1.74mm thick. Inflorescences scapiflorous, not radiate; ultimate units cymose; peduncles short, 2.31-7.74mm long hairy. Involucral bracts 4, in one row, lanceolate-acuminate, hairy outside, glabrous inside, with 5-7 prominent veins, 4.5-8.89mm long, 2.20- 4.51mm width, as about one third as flower length. Involucel cylindrical, 2.06-2.97 mm long, 1.39-1.57mm width, densely hairy with tufts of hairs at base: ribs prominent, 6-8; corona short, white membranous at the involucel apex, 0.2-0.3mm width. Flowers are only 4 in capitula. Calyx plumose violet sitae, persistent on the ovary, shortly stipitate; setae 15-22, 7.55-11.63mm long. Corolla gamopetalous, 5 united petals; pink or whitish, funnel-form, 14.32-16.37mm long; limb lobes subequal, obovate-oblong, sparsely hairy outside, glabrous inside, 1.89-4.63mm long 1.35-3.94mm width; tube 5.45-8.87mm long, 0.54-2.49mm diameter. Stamens 4, inserted in the upper part of the corolla tube, variable in length but not didynamous, exerted; filament 5.94-11.72mm long, 0.2-0.48mm diameter; anthers 1.65-1.78 x 0.6-1.1mm, dorsifixed dehiscent via longitudinal slits, introrse; style 1, slender, 10.74-15.26mm length, 0.61-0.34mm diameter, exerted at maturity to the same level of stamens or slightly less. Stigma is 1, 0.68-0.82mm diameter, capitate; ovary inferior enveloped by involucels. Achene smooth-faintly ribbed, 3.10-6.13mm long, 1.52-2.43mm width. Seeds are with a smooth large, straight embryo (Figures 2, 3, 4, and 5).

Phenology: Flowering May-July, Fruiting Aug. - Sept.

Type: Iraq, Kurdistan, Duhok province, on a steep rocky small mountain valley, north Duhok city, below peak of Kiyliya Firaeni of the Bykhair mountain track, south-west direction, altitude 712m, latitude 36° 52' 43.486" N, longitude 042° 59' 11.083" E, 11 June/2017, Saleem Esmal Shahbaz (University of Duhok), 2017-3634. Holotype: DPUH (Duhok Province University Herbarium), Isotype: KBFH (Kurdistan Botanical Foundation Herbarium).

2.2 Diagnosis and related taxa:

Pterocephalus tetraflorus was easily recognized from all other species of *Pterocephalus* by having non-radiant capitula of only four flowers per each. It was closely related to *P. strictus*, but clearly differed from it in characters shown in the table 1. Table 1. Morphological differences between *P. tetraflorus* and *P. strictus* (Davis, 1972).

Characters	<i>P. tetraflorus</i>	<i>P. strictus</i> Boiss. and Hohen.
Leaves	Lower leaves pinnatisect and simple Upper leaves obovate, elliptic, ovate-lanceolate,	Oblong-lanceolate
Flowers	Four/capitula	Numerous, usually more than four, up to 12/capitula
Calyx	15-22 plumose setae	About 12 plumose setae

Habitat and Distribution

This species of the plant occurred in the dry very steep mountain gorge and mountain valleys, in calcareous cliffs, on rock faces, in crevices of cliffs where direct sun exposure reduces by about 2-3 hours in a day; at the altitudinal range of 578- 848m. The plant avoids very cold sites, high altitude, deep fertile and damp places, it is usually observed growing with plants like *Stellaria media* (L.) Vill., *Andrachne aspera* Spreng., *Sempervivum tectorum* L., *Umbilicus intermedius* Boiss. *Asperula asterocephala* Bornm., *Verbascum speciosum* Schrad., and *Parietaria judiaca* L.

The plant is only found in lower mountain zone of Duhok province, quite local, but abundant in its growing locations. The characteristic habitat of steep slopes and crevices of cliffs prevents possible fires, grazing, and gathering of plants by local people, therefore this species is facing no considerable threats and its status can be treated as of least concern (LC) (IUCN Red List, 2012).

3. CONCLUSION

All specimens of *Pterocephalus* investigated from Duhok province and probably from Iraq are *P. tetraflorus*. Specimens investigated from eastern Turkey are *P. strictus*.

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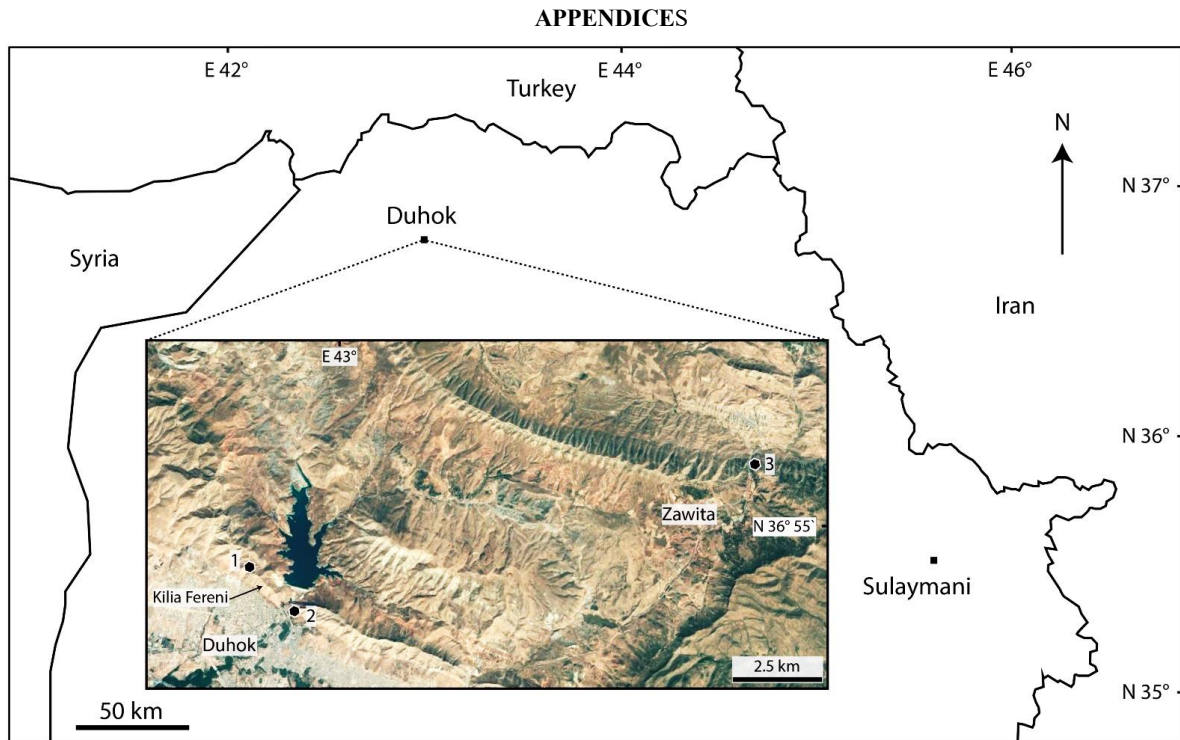


Figure 1. Map of Northern Iraq showing sites of *P. tetraflorus* in Duhok province: (1). Kilia fereni, (2). Duhok gorge, (3). Zawita gorge.



Figure 2. a and b. Habit and habitat of *P. tetraflorus* in Duhok province: Kilia fereni.

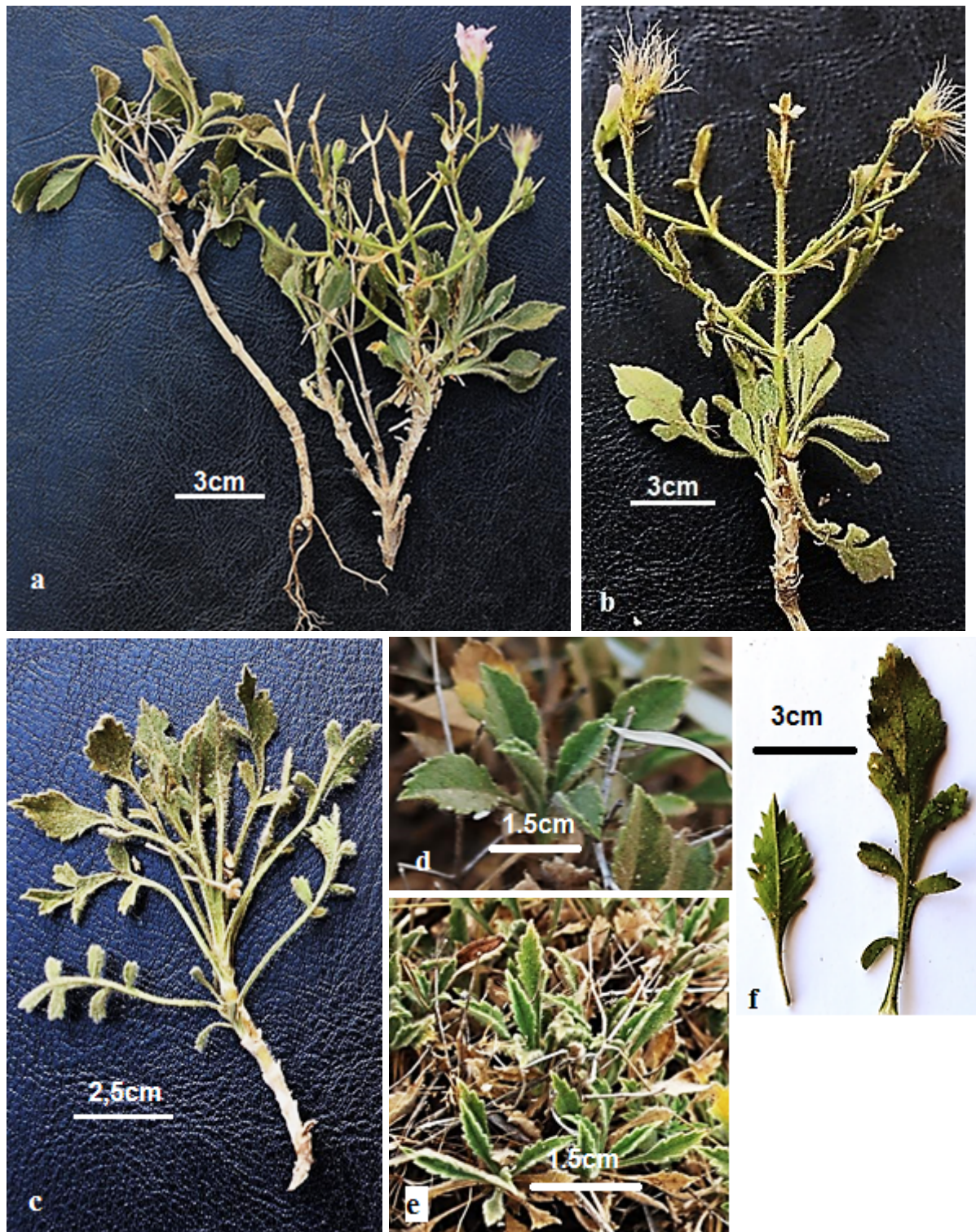


Figure 3. a and b. Stem branches at fruiting stage, c. stem branch showing upper crowded simple leaves and lower dissected leaves, d and e, upper leaves, f. lower leaves.

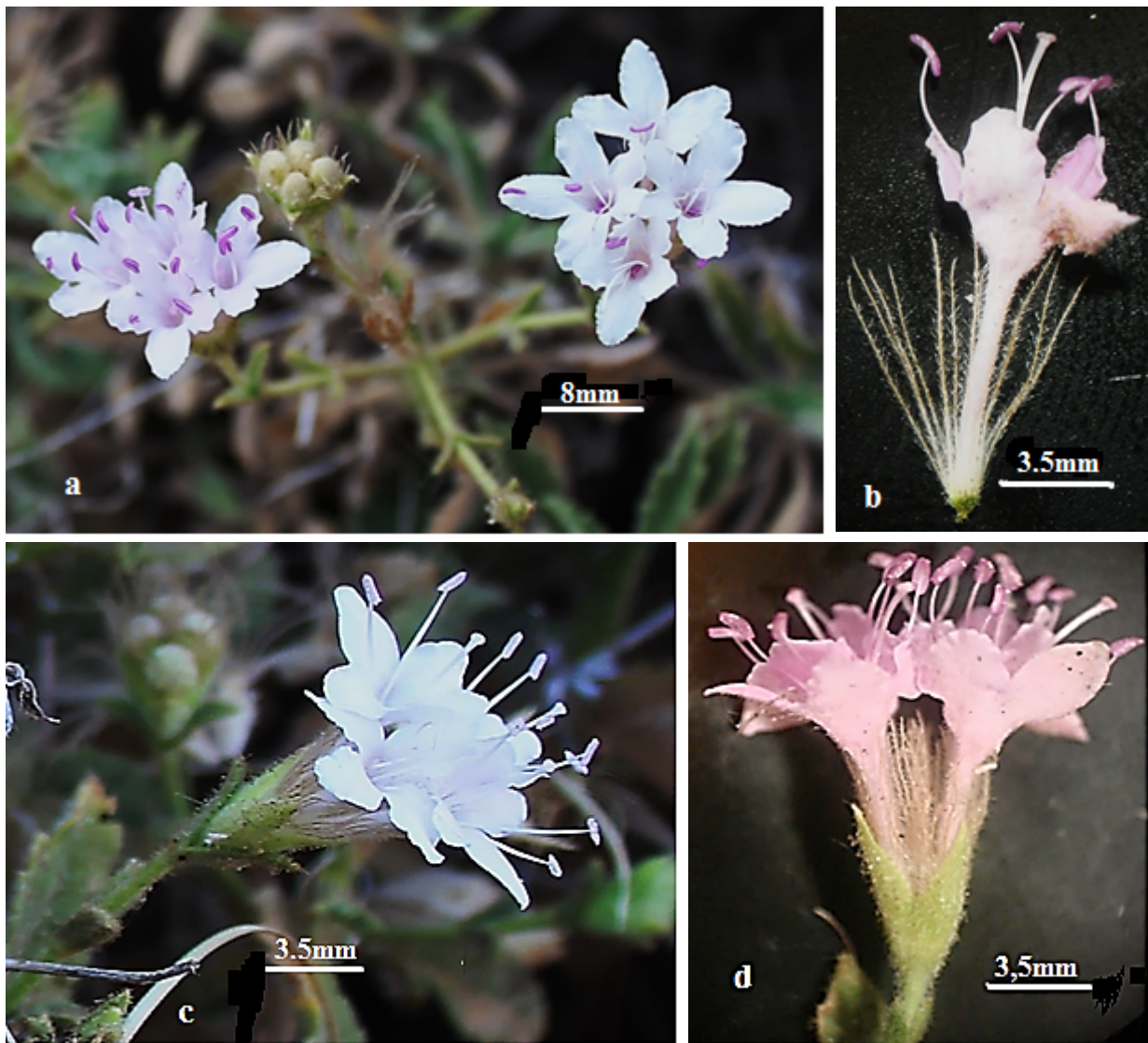


Figure 4. Flowers and inflorescences: a. Top view of inflorescences of four-flowered capitula, b. mature flower parts, c. side view of a whitish four-flowered capitula with four involucre bracts, d. side view of a pinkish four-flowered capitula with four involucre bracts.

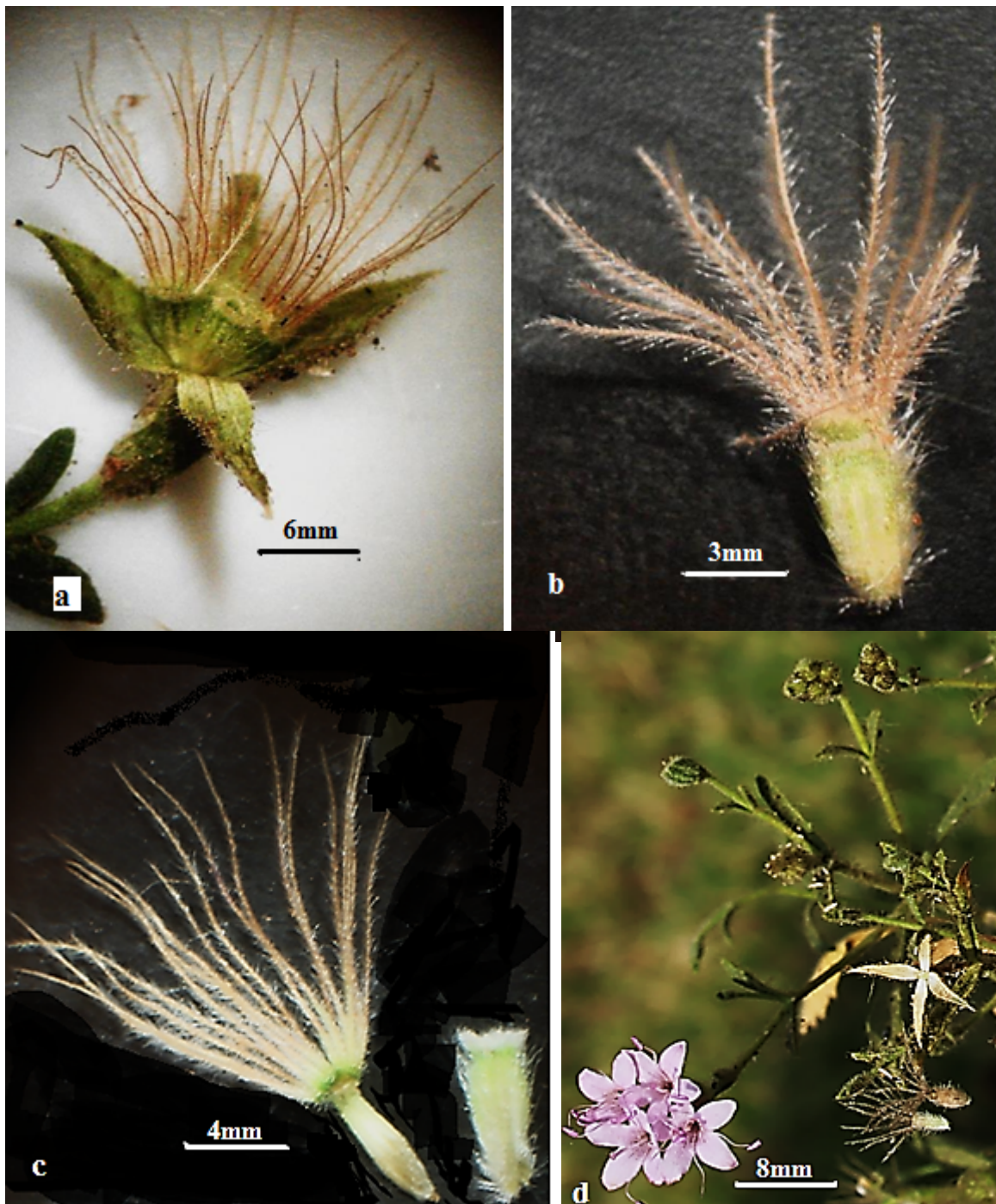


Figure 5. a. Four-fruited head with plumose calyx and enveloped by four involucral bracts and involucels with 6-8 prominent ribs, b. single fruit with plumose calyx and involucel densely hairy, c. naked fruit without involucel and the involucel removed and placed at the right side of the seed, the white corona topped the involucel, d. four flowered capitula and four fruited heads with separated fruits and white involucral bracts.