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Tricholepis infundibuliformis Dittrich, a new species from Pakistan (Compositae-Cardueae)

MANFRED DITTRICH

ABSTRACT

DITTRICH, M. (1993). *Tricholepis infundibuliformis* Dittrich, a new species from Pakistan (Compositae-Cardueae). *Candollea* 48: 607-614. In English, English and German abstracts.

Comparative morphological, carpological and palynological investigations have shown that a specimen belonging to the genus *Tricholepis* DC. (Cardueae-Centaureinae) represents a species new to science.

ZUSAMMENFASSUNG

DITTRICH, M. (1993). *Tricholepis infundibuliformis* Dittrich, eine neue Art aus Pakistan (Compositae-Cardueae). *Candollea* 48: 607-614. Auf Englisch, englische und deutsche Zusammenfassungen.

Vergleichende morphologische, karpologische und palynologische Untersuchungen haben ergeben, dass die zur Gattung *Tricholepis* DC. (Cardueae-Centaureinae) gehörende Art als für die Wissenschaft neu anzusehen ist.

KEY-WORDS: *Tricholepis infundibuliformis* — *COMPOSITAE* — Morphology — Carpology — Palynology — Taxonomy.

When Prof. K. H. Rechinger came back from the Congress held in honor of the centenary of J. L. Steward in Karachi in 1991, he handed me over for determination a specimen of a Compositae belonging to the *Cardueae-Centaureinae*. This plant was collected some years ago in the Western part of Pakistan. Some characters of the involucre suggested to us immediately that it might be a species of the genus *Tricholepis* DC. The following comparative study has shown that our supposition was right and that the species is new to science.

Diagnosis

***Tricholepis infundibuliformis* Dittrich, spec. nov.**

Suffrutices, 50-70 cm alti, a basi ramosissimi; rami virescentes, sulcati, in sulcis albido-tomentosi. Folia basalia florendi tempore jam emarcida; folia caulina inferiora et media sessilia, oblongo-lanceolata, indivisa, remote sinuato-dentata, glabra, $9 \times 1-1.5$ mm; folia caulina superiora linearia, acuminata, ca. $5-3 \times 0.3$ mm.

Capitula 10- vel 15-flora, homogama, ad extremos ramos (?) singula, vel — si mutilata — singula vel bina in ramulis 0-5 mm longis foliis squamiformibus provis. Involucra 16-18 mm alta, in medio ca. 6 mm lata, infundibuliformia, basin versus attenuata; folia involucralia dense appressa,

in seriebus obliquis dense disposita; externa oblongo-triangularia, 3-3.5 mm longa, mediana et inferiora lineari-lanceolata usque ad anguste lineari-lanceolata, 9-15 × 1 mm, straminea, distincte carinata et disperse albido-pilosa; appendices inconstrictae, appressae, anguste triangulares in setam 2-3 mm longam excurrentes; receptaculum in sectione longitudinali oblongo-triangulare excavatum planum setis albis 7 mm longis obsitum.

Corolla roseo-violacea, 12 mm longa, tubo 4 mm longa, limbo 8 mm longo, basi leviter campanulata, corollae lobis 2.5-2.6 mm longis, basi 0.1 mm latis.

Apex styli 1.5 mm longum, basi annulo pilorum bene evoluto et ramis ca. 1.3 mm longis late patentibus.

Achaenia (submatura) coronula distincta margine denticulata provisa, superficie obtusa, glabra, in tertia parte superiore cicatricosa; articulatione basali-laterali/adaxiali, marginibus non labiato-torosi, cicatrice obtrullata, sine elaiosome.

Pappus persistens, albus, duplex; radii exteriores setiformes, breviter barbati, in lineis obliquis circiter quinquieseriatas dispositi, margine centrum versus elongati (usque ad 8-10 mm); setae interiores uniseriatas, squamis 5-6(-8) circiter 12 mm longis, triplo latioribus, scabris compositas.

Typus: Plants of Hazara, near Patan on the way to Besham, erect, 50-70 cm high. Heads purplish pink. 28.8.1988, *Omar & Qaiser 2266* (KAU!; isotype: G!).

Description

a. *Habit*

Erect, 50-70 cm high, from the base on branched, twiggy undershrub (Fig. 1a); branches greenish, ribbed, with a whitish, tomentose indumentum in the furrows.

Basal leaves in flowertime deciduous, middle cauline leaves oblong lanceolate, entire and elongated toothed, glabrous, 9 mm long and 1-1.5 mm broad; upper ones sessile, linear, 5-3 mm long and ca. 0.3 mm broad.

b. *Capitula*

Capitula homogamous, discoid, with 10 to 15 flowers, terminal (?) or, after damage caused by browsing animals, one to two on lateral, 0-5 mm long scaly branches.

Involute 16-18 mm high, in the middle about 6 mm broad, funnel-shaped (Fig. 1b); phyllaries pluriseriate, imbricate, adpressed; the outer ones oblong triangular and 3-3.5 mm long, the middle to inner ones narrowly to linear-triangular, 9-15 mm long and 1 mm broad, straw-coloured, with a sparse, whitish indumentum on both sides of the central keel; the not well distinct appendages ending in a 2-3 mm long bristle (Fig. 2b-e).

Receptacle in longitudinal section oblong triangular, hollow, its surface flat and covered with ca. 7 mm long white hairs.

c. *Flowers*

All flowers tubular, nearly actinomorphic and hermaphrodite.

Corollas purplish pink, 12 mm long, composed of an 8 mm long tube basally a little enlarged, and a 12 mm long limb something campanulate below, above with 5 oblong, 2.5-2.8 mm long and ca. 0.3 mm broad corolla lobes; the 5 commissural nerves diverging at the base of the lobes and running up marginally to the apices (Fig. 2a).

Stamens 8.5-9 mm long; filaments 2.5 mm long, flattened, in the middle about 0.1 mm broad and its upper 3/4 on both surfaces covered with relatively long (ca. 0.3 μm) hyaline papillae (Fig. 3c); basal part glabrous; antheropodium very narrow and not enlarged. Anthers 6 mm long with apical, 1.5 long, basally 0.3-0.4 mm broad connective appendages with oil furrows inside (Fig. 3a) and 4-4.5 mm long, apically 0.5 mm broad irregularly bifid anther appendages (Fig. 3c).

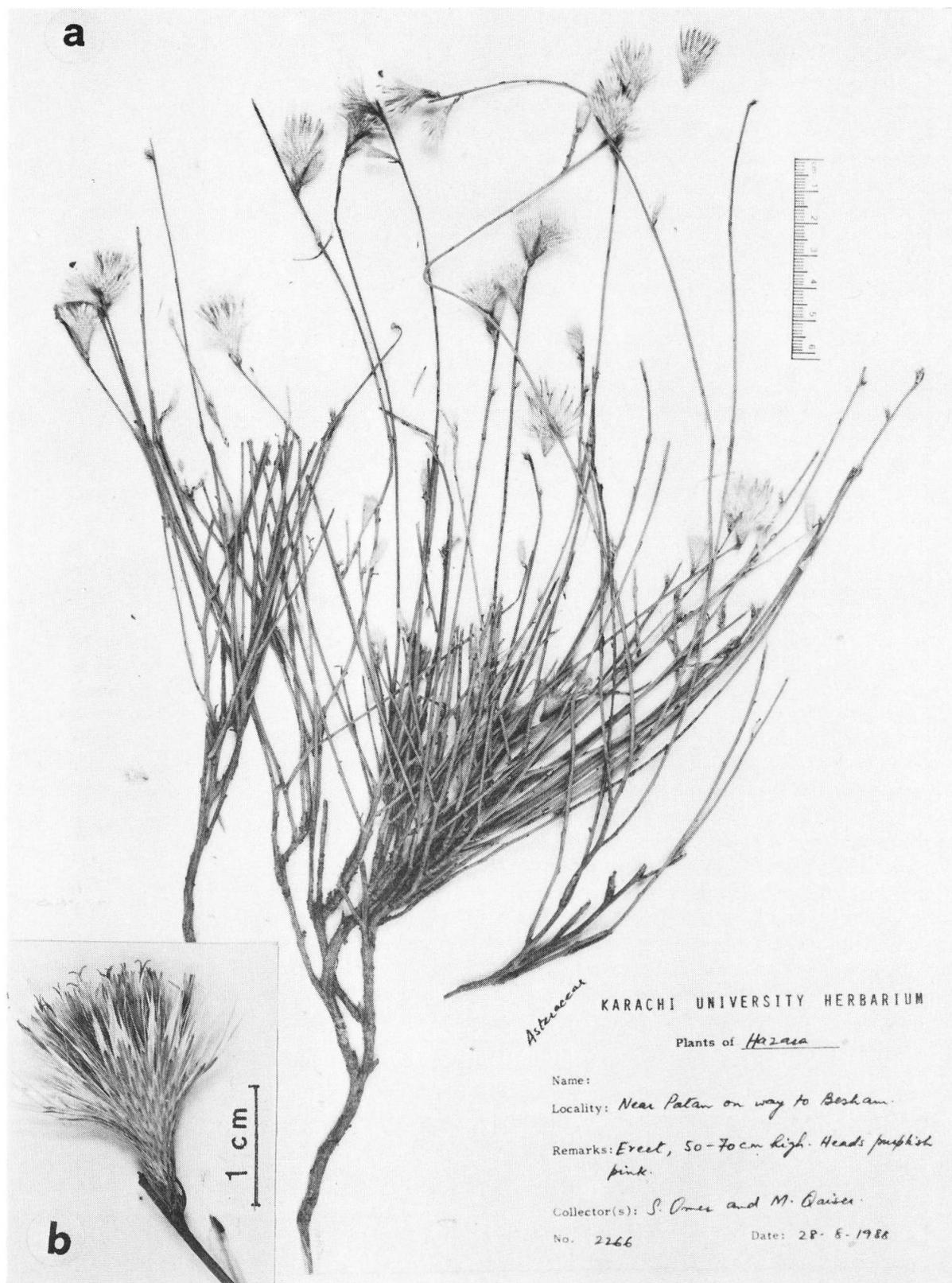


Fig. 1. — *Tricholepis infundibuliformis* Dittrich
a, type specimen; b, capitulum.



Fig. 2. — *Tricholepis infundibuliformis* Dittrich
a, flower (without gynoecium); b-e, row of involucral bracts from outside to inside.

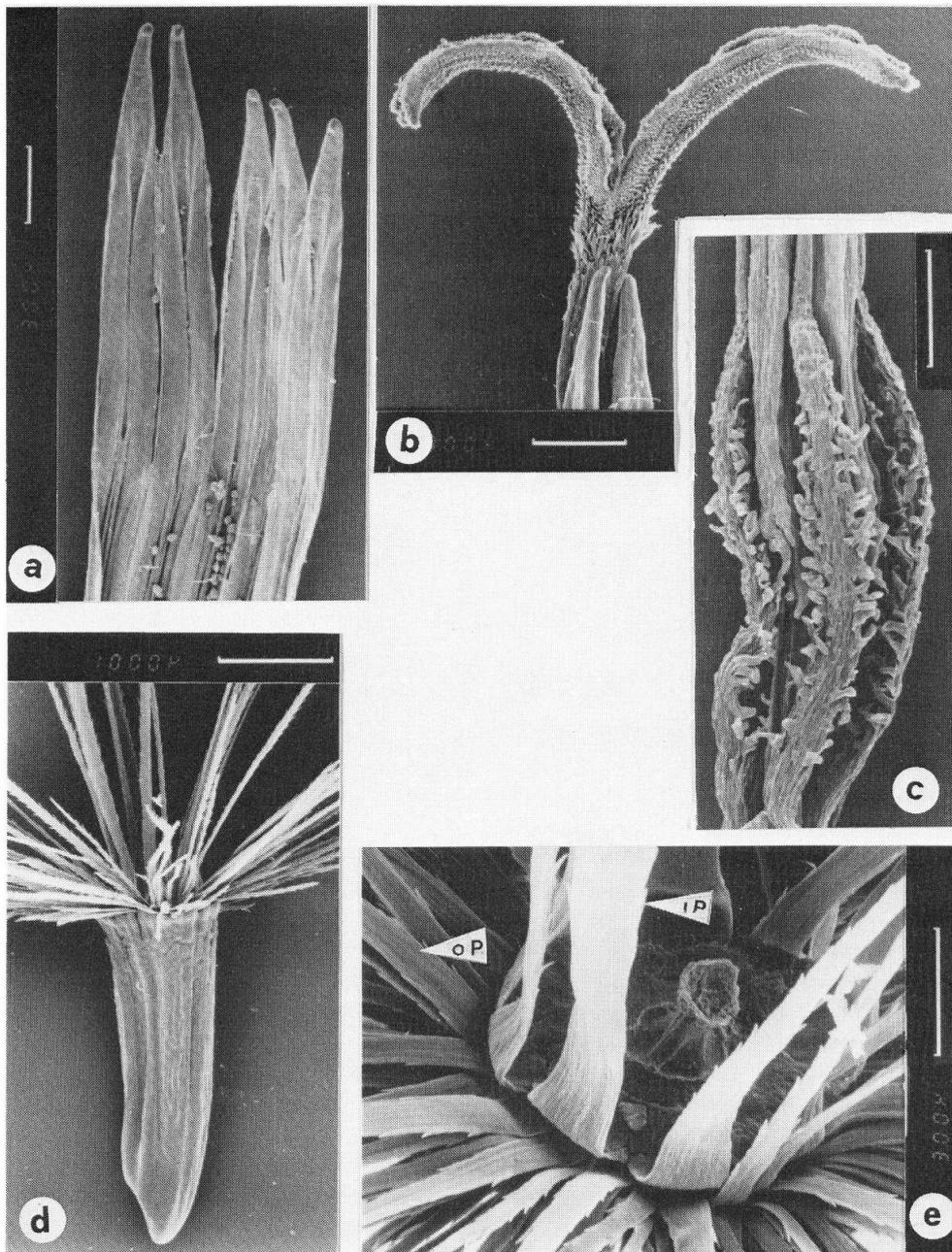


Fig. 3. — *Tricholepis infundibuliformis* Dittrich

a, inner surface of appendages of the connectives; **b**, tip of the style with its diverging branches; **c**, basal part of a stamen showing the filaments as well as the bifid anther appendages; **d**, achene; **e**, apical plate with the double pappus and discus; scale always 300 µm only in **d**: 1000 µm (oP: outer and iP: inner pappus).

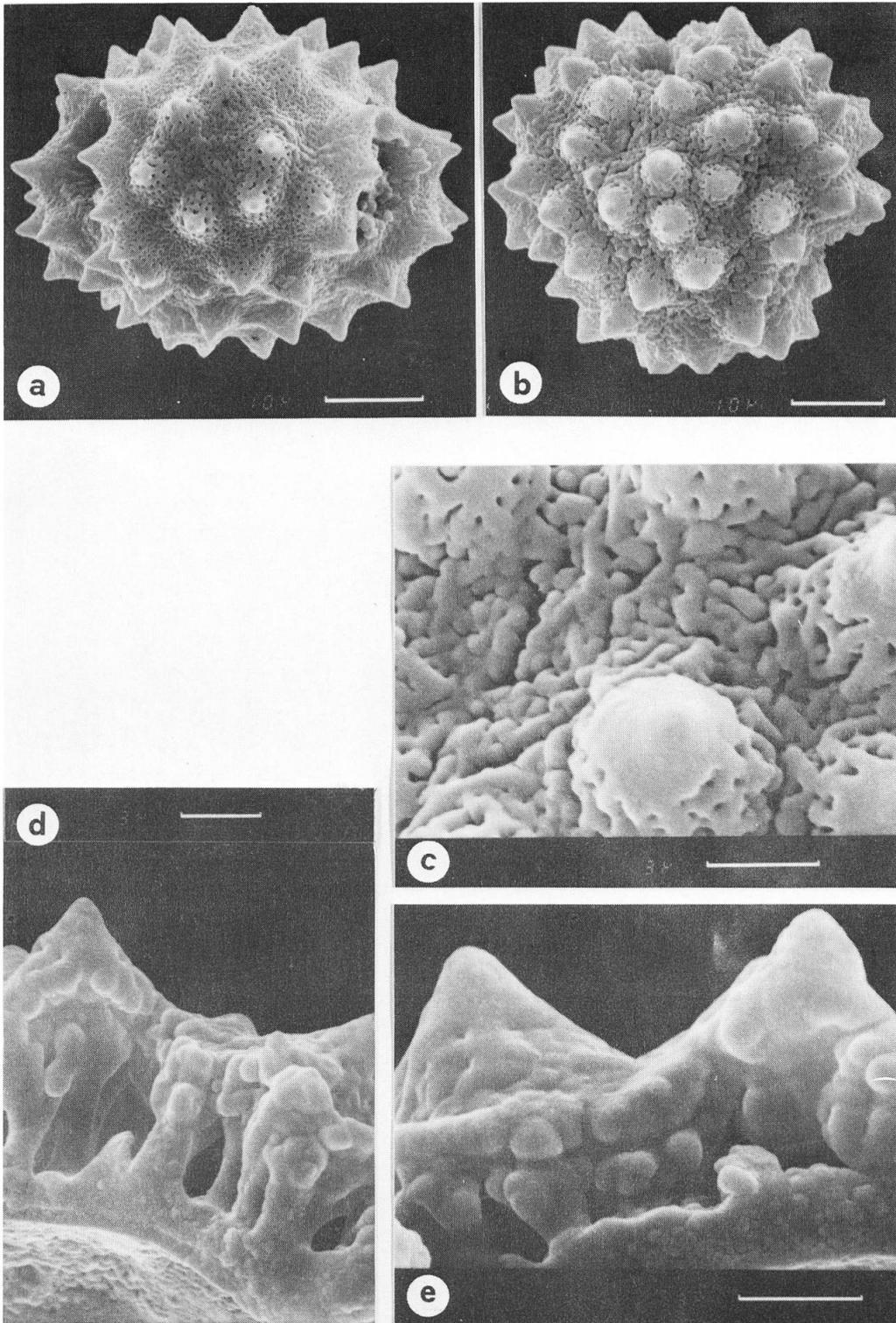


Fig. 4. — *Tricholepis infundibuliformis* Dittrich
a, equatorial and **b**, polar view of a pollen grain; **c**, detail of the sculpture of the exine surface; **d-e**, “cuts” through the sporoderm, **d**, near the pol and **e**, beside a colpus (scale in **a** and **b** 10 μ m, in **c-e** 3 μ m).

Style composed of an unstructured, terete, basally not enlarged shaft and a 1.5 mm long tip with a basal corona of hairs (Fig. 2a and 3b); the two style branches wide spreading over their whole length of 1-1.3 mm, marginally and on the inner surface densely covered with short papillae (Fig. 3b) and the outer surface with short and acuted unicellular hairs.

d. Achenes

Achenes \pm obpyramidal (Fig. 3d), 3.5 mm long, 1.1-1.3/ 0.8-0.9 mm (Bm/Bt)¹ broad. Apical crown clearly developed, 0.2-0.3 mm high, longitudinally ribbed outside, ending in a crenulate border; pericarp surface sand-coloured, mat, somewhat scared, glabrous; orientation of the basal detachment area basal-lateral/adaxial, obtrullat, without thickened but a little whitish borders and without elaiosome-like detachment tissue. Seed testaceous, fixed by a "hilum basale".

Pappus white, not deciduous, double (Fig. 3d-e); bristles of the outer ones shortly barbellate, inserted in ca. 5 ranks on the apikal plate, increasing in length from outside to the inside (up to 8-10 mm); inner pappus in one row, its 5-6(-8) scales ca. 12 mm long, twice as broad as the outer ones, rough, geniculately curved and enlarged basally.

e. Pollen

Form of pollen grains (after the terminology of ERDTMAN (1952) and WAGENITZ (1955) suboblat (length from pol to pol 30-31 μ m and equatorial diameter 40-42 μ m: pollen index 0.74-0.75), tricolporate, with relatively short (1.2 μ m), 0.7 μ m broad colpi, pointed at their ends. Upper surface of the pollen wall echinat, length of the spines ca. 2.5 μ m and with small perforations situated in curved furrows (Fig. 4a-c).

"Cuts" of pollen grains (Fig. 4d-e) showing an exine with a well developed level of columellae ("innere Stäbchenschicht", WAGENITZ, 1955 or "baculae", STIX, 1960), the longest (ca. 10 μ m) in proximity of the pol, forming at their apical ends short branches supporting the compact but perforated ectexine layer without a second layer of fine sticks ("äussere Stäbchenschicht", WAGENITZ, 1955), as observed by the same author in *Centaurea* (*Dealbata*-Typ, *Cyanus*-Typ and *Montana*-Typ).

f. Systematic position

Some characters, as the similar shaped and adpressed involucre bracts as well as the comparable achenes with the doubles pappus show it clear that the new species is nearly related to *T. chaetolepis* (Boiss.) Rech. f. and *T. edmondsonii* Rech. f. After the description of DUNN (1921) and RECHINGER (1979) also *T. toppinii* Dunn belongs to the same group of species.

The plants of *T. infundibuliformis* can be distinguished from the 3 species mentioned above by a visibly higher degree of ramification, the considerably reduced leaves and over all by the funnel-shaped involucre caused by its obconical receptacle.

The habit as well as the characters of achene and pappus show that this group of species has a relationship to the genus *Karvandarina* Rech. f. which has been placed by the author (DITTRICH, 1977) into the *Serratula*-group of the *Cardueae-Centaureinae*.

g. Distribution

Until now only known from the type gathering.

¹(Bm/Bt): median/transversal width.

ACKNOWLEDGEMENTS

I wish to address my kindest thanks to Prof. K. H. Rechinger who was so kind as to write the Latin translation of the diagnosis, and to Prof. M. Qaiser (Karachi) who sent me on loan the specimen mentioned above. As usual our assistant Mrs. Hélène Geser resolved with certainty all technical problems.

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