

Astragalus turkmenensis (Fabaceae), a new species from Turkey

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Astragalus turkmenensis Dural, O. Tugay & Ertugrul *sp. nova* (Fabaceae) from Central Anatolia in Turkey is described. It is placed in sect. *Cystium* and known only from the type gathering. It is compared with the morphologically similar *A. physodes* subsp. *acikirensis*. A distribution map of the new species and the related species is provided.

Key words: *Astragalus*, *Cercidothrix*, *Cystium*, Fabaceae, new species, taxonomy

Astragalus (Fabaceae), with ca. 2500 species, is the largest genus of vascular plants in the world (Maassoumi 1998). It is also the richest genus in Turkey, with ca. 456 species placed in 62 sections (Chamberlain & Matthews 1970, Davis *et al.* 1988). There are 210 endemic taxa and the rate of endemism is thus about 47%. Most of the endemics grow on the high mountain steppe (Duman & Akan 2003). *Astragalus* is distributed in particular in the semiarid regions and steppe areas in the Irano–Turanian phytogeographic region of Turkey.

The authors collected some interesting plant specimens from the Karapınar provinces during the Project of Endemic Plants of Konya (Turkey) in 2002 and 2003. One of those specimens belonged to *Astragalus*. It had very peculiar fruits and was not referable to any known species. It was compared to specimens of supposedly related species in the Herbaria of KNYA and GAZI and to pertinent literature (Chamberlain &

Matthews 1970, Davis *et al.* 1988, Aytaç 2000, Podlech 1999, 2001, Akan & Civelek 2001, Aytaç *et al.* 2001, Ekici & Aytaç 2001, Podlech & Sytin 2002, Aytaç & Ekici 2002, Hamzaoğlu & Kurt 2002, Duman & Akan 2003, Göktürk *et al.* 2003, Hamzaoğlu 2003, Ketenoğlu & Mene-men 2003, Akan & Aytaç 2004, Ghahremani-Nejad 2004, Duran & Aytaç 2005). It was concluded that the specimens represented a species new to science.

Astragalus turkmenensis Dural, O. Tugay & Ertugrul, *sp. nova* (Figs. 1 and 2)

Affinis *A. physodi* subsp. *acikirensis*, *pedunculis* 1–4 cm (*non* 4–8 cm) *longis*, *calyces* 13–18 mm (*non* 7–10 mm) *longis*, *calycis dentibus* 2–3 mm (1–2 mm) *longis*, *vexillis* 22–28 mm (*non* 15–20 mm) *longis*.

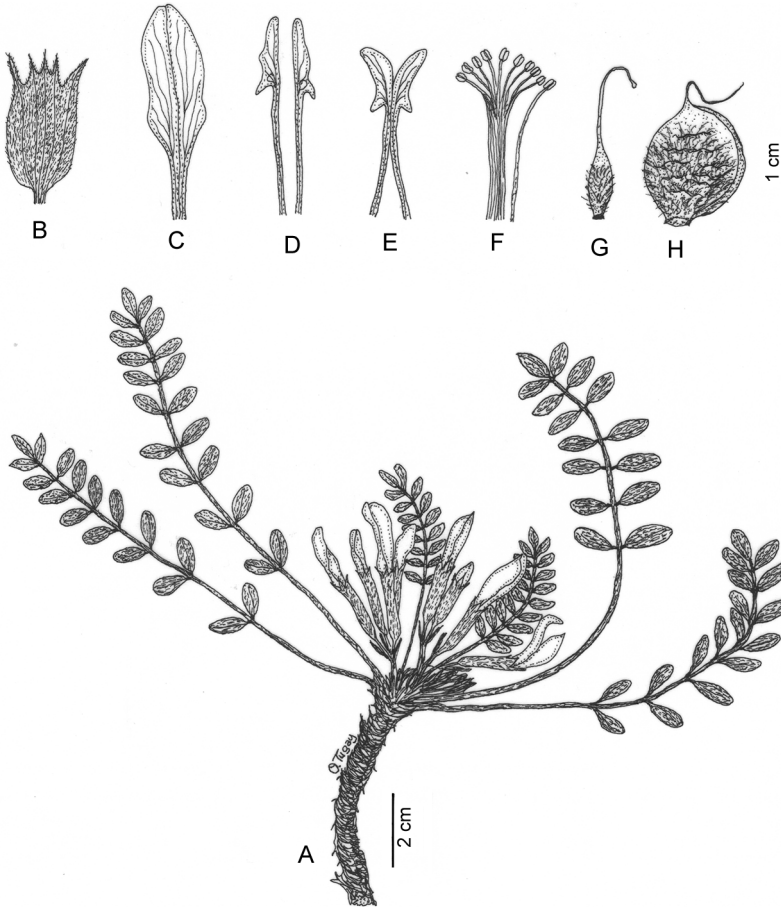


Fig. 1. *Astragalus turkmenensis* (from holotype). — A: Habit. — B: Calyx. — C: Standard. — D: Wing. — E: Keel. — F: Stamens. — G: Ovary. — H: Legume.

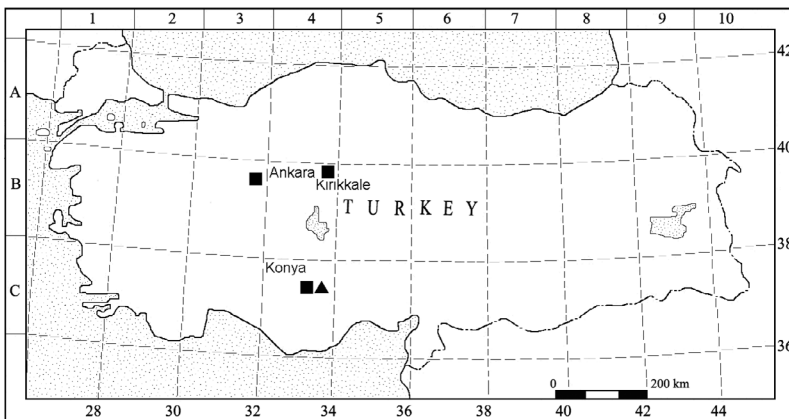


Fig. 2. Distribution map of *Astragalus turkmenensis* (▲) and *A. physodes* subsp. *acikirensis* (■) in Turkey.

TYPE: Turkey. C4 Konya, Karapınar-Hotamış arası, Kamaşağı köyü çevresi, step, 1050 m, 18.V.2003 Ertuğrul 2764, O. Tuğay, Dural, Uysal & Demirelma (holotype KNYA; isotypes GAZI, K).

Perennial dwarf herb, nearly acaulescent, stem to 1 cm, with a woody base. Leaves 4–14

cm long, linear-oblong; petiole 2–5 cm long. Leaflets in 7–11 pairs, 10–15 × 3–4 mm, elliptic to oblong, acute at apex, cuneate at base, spreading bifurcate-sericeous below, glabrescent or glabrous above. Stipules whitish-hyaline, 6–9 mm long, lanceolate, acute to acuminate at apex,

Table 1. Morphological comparison of *Astragalus turkmenensis* and *A. physodes* subsp. *acikirensis*.

Character	<i>A. turkmenensis</i>	<i>A. physodes</i> subsp. <i>acikirensis</i>
Leaflets	densely spreading bifurcate-sericeous below, glabrescent or glabrous above	densely adpressed bifurcate hairs on both surfaces
Stipules	6–9 mm long	4–6 mm long
Inflorescence	4–8 flowered, lax; peduncle 1–4 cm long	many-flowered, dense; peduncle 4–8 cm long
Calyx	13–18 mm; teeth 2–3 mm	7–10 mm; teeth 1–2 mm
Corolla	yellow	violet to cream-coloured
Standard	22–28 mm long	15–20 mm long

adnate to the petiole for 1–2 mm, covered with adpressed white hairs outside, later glabrescent. Peduncle 1–4 cm long, furnished with black and white bifurcate hairs. Inflorescence a short raceme, lax, 4–8 flowered. Bracts thinly membranous, 4–7 mm long, lanceolate to ovate, sparsely hairs. Bibracteolate, bracteoles 3–4 mm long, lanceolate to triangular, with black and white unequally bifurcate hairs. Flowers shortly pedicellate, pedicel ca. 3 mm long. Calyx 13–18 mm long, cylindrical, predominantly with adpressed white and sometimes few black hairs at apex; teeth triangular, 2–3 mm long, predominantly with black hairs. Corolla yellow. Standard 22–28 mm long, oblong-oblancoelate, \pm retuse at apex, tapering gradually at base. Wings 20–25 mm long; blades triangular, obtuse at the apex, clearly constricted above auricle. Keel 19–22 mm long; blades falcate. Stamens 18–20 mm long. Ovary \pm elliptic adpressed white sericeous. Legume globose to globose-ovoid, 10–15 \times 11–16 mm, strongly inflated, laterally grooved, spreading and with sub-bifurcate white hairs, bilocular with 15–20 seeds; the beak 8–10 mm long, slightly curved. Seeds reniform, brown, 2–3 \times 1.5–2 mm. Flowering in May, fruiting in June.

Astragalus turkmenensis is only known from the type gathering and it represents the Irano-Turanian element. Its range is restricted to a single location and the area of occupancy is estimated to be less than 5 km. It grows in steppe and arid places with other endemic taxa of *Astragalus*, such as *A. physodes* subsp. *acikirensis*, *A. brevidentatus*, and *A. leporinus* subsp. *leporinus* at 1050 m altitude.

Astragalus turkmenensis belongs in subgenus *Cercidothrix* and in section *Cystium*, in which it can be distinguished by being nearly

acaulescent; leaves imparipinnate; leaflets bifurcate-hairy; calyx cylindrical; legumes sessile or nearly so, as well as inflated, membranous, glabrous or nearly so. Furthermore, the legumes of the *A. turkmenensis* are conspicuously globose and the corolla is yellow.

At first sight *A. turkmenensis* looks like *A. humilis* (sect. *Trachycercis*), but it has a long peduncle (to 2 cm in flowers and to 4 cm in fruits). Therefore it must to be in sect. *Cystium* and should be compared with *A. physodes*.

Astragalus physodes was in *Flora of Turkey* put in sect. *Proselius* (the valid name of which is *Incani*). Actually it belongs to sect. *Cystium*. *Astragalus turkmenensis* is allied especially to *A. physodes* subsp. *acikirensis*, which is known from Central Anatolia. The diagnostic characters of *A. turkmenensis* relative to *A. physodes* subsp. *acikirensis* are provided in Table 1.

Astragalus turkmenensis clearly differs from *A. spruneri* by: peduncles 1–4 cm (not 5–10 cm) long; raceme 4–8 flowered (not 10–20 flowered); bracts 4–7 mm (not 2–4 mm) long; calyx 13–18 mm long (not 8–12 mm) long; corolla yellow (not purplish-red); legume globose to globose-ovoid, inflated, 10–15 \times 11–16 mm long (not oblong-terete, falcate, 6 \times 13–16 mm long).

REPRESENTATIVE SPECIMENS EXAMINED. — *Astragalus physodes* subsp. *acikirensis*: **Turkey**. B3 Ankara: Polatlı, Polatlı'nın 18 km batısı, Acıklar mevkii, steppe, 840–850 m, 25.V.1990 Z. Aytaç & H. Duman 3031 (isotypes GAZI!, ANK!); same locality, ibid. Topçu Atış Okulu, 25.IV.1991 Z. Aytaç & H. Duman 3490 (GAZI); C4 Konya, Karapınar-Hotamış arası, Kamaşğıl köyü çevresi, steppe, 1050 m, 18.V.2003 Ertuğrul 2763, O. Tugay & Dural (KNYA). — *Astragalus spruneri*: **Turkey**. A3 Bolu: Mudurnu, Uluhan, *Pinus nigra* ormanı altı, 31.V.1975 Y. Akman 9286 (ANK); A4 Karabük: Yörük köyü çevresi, *Juniperus excelsa* ormanı içi, 1600 m, 11.V.1984 M. Demirörs 1699 (ANK); B6

Kayseri: Sarız, Yalak, Binboğa Dağı, steppe, 1450–1500 m, 7.V.1991 Z. Aytaç & H. Duman 3677 (photo GAZI); C6 Kahramanmaraş: Kama dağı, Göksu'nun güneydoğusu, 1600 m, 4.V.1957 P.H. Davis 27571 (ANK).

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