

## THREE NEW SPECIES OF ASTRAGALUS (FABACEAE) FROM IRAN

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Three new species of *Astragalus*, including *A. (Caprini) chamanbidensis*, *A. (Craccina) kelishomensis* and *A. (Hymenostegis) rijabensis* are described from different parts of Iran. Line drawings and affinities of these species with their related species are given.

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**Key words:** *Astragalus*; Sect. *Caprini*; Sect. *Craccina*; Sect. *Hymenostegis*; Iran

سه گونه جدید از جنس گون (*Astragalus*) برای ایران

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*Astragalus (Caprini) chamanbidensis* Maassoumi & Mozaff., *A. (Craccina) kelishomensis* Maassoumi, سه گونه جدید

*A. (Hymenostegis) rijabensis* Maassoumi, Mozaff. & Bagheri از نقاط مختلف ایران به همراه تصاویر

شرح داده می‌شود و با گونه‌های نزدیک آنها مقایسه می‌شود.

## INTRODUCTION

The genus *Astragalus* comprises about 2627 taxa in the Old World (Maassoumi 1998, Unpublished Data 2016) including 841 distinct species in Iran (Unpublished Data 2016), of which 125 species belong to the largest sect. *Caprini* DC. and 70 species of sect. *Hymenostegis* Bunge have been recorded from Iran (Podlech, Zarre & Maassoumi, 2001). Based on new available materials with using the recent literatures (Podlech, Zarre & Maassoumi, 2001, no.175; Podlech, Maassoumi & Zarre, no. 178; Podlech & Zarre 2013), some new species from sections *Caprini*, *Hymenostegis* and *Craccina* are

described.

*Astragalus (Caprini) chamanbidensis* Maassoumi & Mozaff. **sp. nov.** (fig. 1)

Differs from *Astragalus lambinonii* Podlech, leaflets in lower side glabrous (not with dense ascending hairs), calyx glabrous (not densely pilose), c. 13 mm long (not 20 -23 mm), teeth 2-3 mm (not 5-6mm) long.

Plant stemless, c. 15-17 cm long, at the base loosely covered with c. 3 mm long ascending hairs; other vegetative parts glabrous. Stipules glabrous, brownish, c. 5-7 mm long, at the base c. 2 mm connate to the petiole, other sides free from each other. Leaves

c. 17 cm long; rachis very loosely covered with sparse c. 2.5 mm long hairs; petiole c. 4-5 cm long, more densely covered with ascending long hairs. Leaflets 11-13 pairs, ovate to elliptic, completely glabrous, c. 8-15 mm long and 5-9 mm wide, retuse to emarginate at apex. Inflorescence basal, many flowered. Bracts linear, lanceolate, pilose, c. 10 mm long. Peduncle c. 1-1.5 cm long, hairy like petiole, with 2-3 flowers. Calyx tubular, c. 13 mm long, glabrous; teeth c. 2-3 mm long, hairy. Corolla yellow, changing to brownish. Standard c. 33 mm long; limb narrowly elliptic, c. 7 mm long, retuse at apex, at the base gradually passing to a narrow and long claw. Wing 32

mm long; limb narrowly elliptic, c. 10 mm long and 2.5-3 mm wide; auricle c. 2 mm long; claw 22 mm long. Keel 29 mm long; limb oblique elliptic, c. 12 mm long, c. 5 mm wide; auricle short. Ovary pilose, stipitate, stipe c. 4-4.5 mm long, glabrous. Pods elliptic, glabrous, at the base stipitate, stipe c. 4 mm long, ventrally carinate, dorsally sulcate, incompletely bilocular; valves thin, straw color. Seeds reniform, pale brown, c. 8 mm long and 5 mm wide.

**Type:** Chaharmahal-e Bakhtiari: Lordegan, Kuh-e Rig from S. of Rig village, deep gorge Chaman Bid, 3.6.2009, 31, 22N: 51, 00 E, 2295m., Mozaffarian 97107, TARI.



Fig. 1. *Astragalus chamanbidensis*.

*Astragalus (Craccina) kelishomensis* Maassoumi, Mozaff. & Moradi, **sp. nov.** (fig. 2)

Differs from *Astragalus brevifructus* Podlech, in leaflets that are 5-7 pairs (not 2-3), calyx mostly covered with appressed white hairs, very rarely with some scattered short black hairs below the teeth (not black and white hairs or predominantly black hairs), leaflets narrowly elliptic (not linear), ovary hairy, legumes covered with short appressed white hairs (not glabrous). It differs from *A. hutthianus* Freyn & Bornm., in calyx that is 4.5-5 mm long (not 3.5-4 mm), standard c. 15 mm long (not 9-10 mm), elliptic (not rhomboid).

Plant c. 30-40 cm high. Stem densely covered with short symmetrical bifurcate appressed hairs, c. 0.2 mm long on the calyx; bracts mixed with few scattered black appressed hairs. Stipules hyaline, c. 4-5 mm long, at the base shortly connate to the petioles, other side vaginate, connate to each other, sparsely to loosely covered with appressed white hairs. Leaves 2.5-5 cm long; petiole c. 1-1.5 cm long, hairy; leaflets 5-7 pairs, narrowly elliptic to linear, c. 10 mm long and 4 mm wide, upper side loosely, lower side more densely covered with short appressed hairs. Inflorescence c. 8-12 cm long, with many remote flowers. Bracts ovate, c. 1 mm long, sparsely pilose or sometime with few isolated black hairs. Pedicel c. 1-2 mm long, densely hairy. Calyx c. 5 mm long, tubular, covered with white appressed hairs, on the teeth with a few black hairs, c. 0.2 mm long; teeth subulate, c. 0.5 mm long. Corolla purplish, later changing to yellow. Standard rhomboid, c. 15 mm long and 7 mm wide, retuse to emarginated at the apex. Wing c. 12 mm long; limb oblong to elliptic, c. 7 mm long and 2.5 mm wide; auricle c. 0.7 mm long; claw 4.5 mm long. Keel c. 10 mm long; limb elliptic, c. 5 mm long and 1.5 mm wide. Ovary sparsely pilose, sessile. Pods glabrous, oblong to elliptic, glabrous, erect, c. 13 mm long and 3 mm wide, ventrally carinate, dorsally applanate to shortly sulcate; beak curved, with few seeds.

**Type:** Gilan, Rudbar, margin of Sefidrud dam to Tarom (Gilvan), 28.4.2014, 280m, V. Mozaffarian 102628 (Holotype: TARI).

**Paratype:** Gilan: rudbar, margin of the road to Tarom, 12.3.2013, 280 m, V. Mozaffarian 102604, TARI.

*Astragalus (Hymenostegis) rijabensis* Maassoumi, Mozaff. & Bagheri, **sp. nov.** (fig. 3)

Differs from *A. bashmaghensis* Maassoumi & Podlech, in stipules that are glabrous, cartilaginous (not hyaline), bracts persistent, densely covered with appressed hairs (not glabrous and falling), c. 20 mm long (not 10-15 mm long), with long aristae, c. 5 mm

long, calyx covered with long hairs, c. 5-6 mm long (not 3-4 mm), calyx c. 20 mm long (not 13-15 mm), raceme cylindrical, c. 12 cm long (not 8-10 cm); from *A. laguriformis* Freyn, in having the cylindrical raceme (not globose or ovate).

Perennial, fruticose, c. 30-40 cm high. Caudex elongate, c. 10-12 cm long, densely covered with old petioles and stipules. Stipules cartilaginous, glabrous, with ciliate margins, c. 13 mm long, free portion lanceolate, at the base c. 10 mm connate to the petioles. Leaves 10-12 cm long, densely covered with short appressed c. 0.2 mm long hairs, and with few dispersed c. 1.2 mm long spreading hairs; leaflets 6-7 pairs, narrowly elliptic, c. 15-20 mm long and 4-6 mm wide, both sides covered with appressed hairs. Peduncle equalling with the subtending leaves, densely covered with spreading to ascending short and long hairs. Bracts ovate, hairy, c. 23 mm long, acuminate or long aristate, on the middle part densely covered with short and long hairs, toward the margin loosely hairy, with ciliate margins, inner side on the apex with appressed hairs. Calyx inflated, yellowish, c. 18 mm long, covered with short hairs and mixed with long hairs up to 6-7 mm long; teeth subulate, shorter than the tube, c. 5 mm long. Raceme cylindrical, c. 10-13 cm long, many flowered. Corolla yellow. Standard oblong to elliptic, c. 18 mm long; limb c. 6 mm wide, at the base hastate. Wing c. 17 mm long; limb narrowly elliptic; claw 12 mm long; auricle short. Keel 17 mm long; limb elliptic; claw 10 mm long. Ovary sessile, pilose. Pods shortly stipitate, oblong to elliptic, c. 12 mm long and 4.5 mm wide, ventrally grooved and dorsally carinate, densely villose.

**Type:** Kermanshah: ca. 15 km from Eslamabad to Kerend, 1400m, 6. 6, 2012, V. Mozaffarian 101773 (Holotype: TARI).

## DISCUSSION

*Astragalus chamanbidensis* shows a special habitat on the calcareous rocky mountains in Bakhtiari Province. This species grows in the cliff of the rocks along with some lithophilous species such as: *Campanula incanescens* Boiss., *Asperula fragillima* Boiss. & Hausskn., *Dionysia caespitosa* (Duby) Boiss., *Silen chlorifolia* Sm., *Peltaria angustifolia* and *Ferula haussknechtii* Wolf ex Rech. f.. *Astragalus kelishomensis* usually grows on stabilized soil, mostly gravelly with some therophyte species. *Astragalus rijabensis* growing in gravelly hills in the western part of the country together with some therophyte plants mixed with *Stachys kermanshahensis* Rech. f.

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Fig. 2. *A. kelishomensis*.



Fig. 3. *Astragalus rijabensis*.