

SOME INTERESTING NEW SPECIES OF THE GENUS *ASTRAGALUS* IN IRAN

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Eight new species of the genus *Astragalus* belonging to different sections are described from Iran. New species are: *A. (Erioceras) bavanatensis*, *A. (Hymenostegis) simakanensis*, *A. (Erioceras) khongensis*, *A. (Acidodes) magnibracteatus*, *A. (Stereothrix) mahneshanensis*, *A. (Aegacantha) montis-parrowii*, *A. (Incani) quaratchaicus*, *A. (Microphysa) rubriphysa*. Descriptions and distribution of these species are given.

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Key words. *Astragalus*, sect. *Incani*, sect. *Hymenostegis*, sect. *Acidodes*, sect. *Microphysa*, new species, Iran.

تعدادی گونه‌های جدید و جالب توجه جدید گون از ایران

علی اصغر معصومی

بر پایه جمع‌آوری‌های تازه‌ای که در سالهای اخیر توسط گروه گیاه شناسان هرباریوم‌های مختلف کشور از جمله قهرمانی و جواد از تبریز؛ طیبی خرمی و حاتمی از فارس؛ معرفی از کردستان؛ جوهرچی از خراسان؛ نعمتی از کرمانشاه؛ موسوی از زنجان و نوروزی از اصفهان بعمل آمده است. تعداد ۸ گونه جدید معرفی می‌گردد. گونه‌های جدید به بخشهای مختلف تعلق داشته که برای هر گونه دیاگنوز و شرح و برای تعدادی از آنها درباره جایگاه سیستماتیکی و پراکنش جغرافیایی آنها بحث شده است. گونه‌های جدید عبارتند از:

A. (Erioceras) bavanatensis, *A. (Hymenostegis) simakanensis*, *A. (Erioceras) khongensis*, *A. (Acidodes) magnibracteatus*, *A. (Stereothrix) mahneshanensis*, *A. (Aegacantha) montis-parrowii*, *A. (Incani) quaratchaicus*, *A. (Microphysa) rubriphysa*

نمونه‌های تیپ در هرباریوم مرکزی ایران و ایزوتیپ آنها در هرباریوم استانها و تصویر تعدادی از آنها در هرباریوم مونیخ نگهداری می‌گردد .

Introduction

Based on the new collections during the recent years from different parts of the country by the staff of provincial herbaria (Ghahremani & Javadi from Tabriz; Teyebi-Khorrami & Hatami from Fars; Maroofi from Kordistan, Joharchi from Khorassan; Nemati from Kermanshah; Nowroozi from Esfahan and Moussavi from Zanjan provinces, several species belonging to different sections cleared out as the new species for the *Astragalus* flora of country. The new species are described in this paper. Descriptions and diagnoses are given. For some species short notes about their systematic position with geographical distribution are given. All holotypes are preserved in the Central Herbarium of Iran (TARI) and the isotypes are deposited in Tabriz, Sanadaj, Fars, Shiraz, Kermanshah and Zanjan Research Centers and partly in MSB.

Astragalus bavanatensis Maassoumi, Nowroozi & Podlech, **sp. nov.** sect. *Erioceras*
Diagnosis. Inter speciebus e sect. *Erioceras* Bunge foliolis linearibus et ovario glabro insignis.

Description. Plants subcaulescent, 3 cm tall, densely furnished with appressed or subappressed or symmetrically hairs 1-1.2 mm long. *Caudex* up to 15 mm in diameter, mostly with a pluricipital root-crown. *Stem* c. 1 cm long; internodes short, c. 0.5 cm long. *Stipules* 3 mm long, narrowly lanceolate, triangular, subabruptly narrowed, shortly adnate to the petiole, free from each other, densely covered with symmetrically black and white hairs. *Leaves* 2-3 cm long; petiole 1.5 cm long, like the rachis finely striate, rather densely white hairs. *Leaflets* 2 pairs, linear to narrowly elliptic, acute at the apex, often minutely mucronulate, 10-17 mm long and 2-3 mm wide, densely covered with appressed to subappressed hairs on both sides. *Peduncle* 1.2 cm long, thin, angularly sulcate, densely hairy,

below inflorescence with few black subappressed hairs. *Raceme* 3-4 flowered. *Bracts* narrowly triangular, acute, 3 mm long, with black and white hairs. *Pedicels* 1 mm long, flowers erect to spreading. Bracteoles absent. *Calyx* 14 mm long, tubular, obliquely cut at the mouth, densely covered with symmetrically black and white hairs; teeth subulate, 2 mm long. *Corolla* greenish cream. *Standard* 23 mm long; limb c. 9 mm wide, elliptic, obtuse or retuse tip, slightly constricted in lower part, gradually narrowed into a short claw. *Wings* c. 22 mm long; limb narrowly oblong, rounded at the apex, 8.5 x 2.5 mm; auricle c. 1 mm long; claw c. 14 mm long. *Keel* c. 21 mm long; limb obovate-elliptic, subobtuse at the apex, 7 x 3 mm; auricle very short; claw 14 mm long. *Ovary* stipitate, linear, glabrous; style glabrous. *Legumes* unknown.

Typus. Fars: Bavanat area, 8.2. 1381 (Persian calander), Tayebi 812 (hol. TARI; photo in MSB).

Astragalus simakanensis Maassoumi & Hatami, **sp. nov.**, e sect. *Hymenostegis*

Diagnosis. Differt ab *A. straussii* Bornm. inflorescentia multiflora, cylindrica (nec globosa), c. 6 cm longa.

Description. Plants suffruticose, caespitose, spiny, c. 15-25 cm tall. *Stem* c. 8 cm long, covered with remnant of old leaves and branches; stem of the current year 1-4 cm long, covered by leaves and imbricated stipules. *Stipules* hyaline, c. 25 mm long, adnate to the petiole for 14-15 mm, connate behind the stem c. 2 mm, the free portion triangular, glabrous. *Leaves* 6-7 cm long; petiole 1-1.5 cm long, like the rachis densely covered with short and very long spreading white hairs c. 0.4-2 mm long. *Leaflets* 5-7 pairs, remote, narrowly elliptic to linear, c. 10-20 mm long and 1.5-2.5

mm wide, acuminate, pungent, with a mucro c. 1 mm long, on both sides densely covered with spreading hairs c. 0.3-0.6 mm long. Peduncle 10 cm long, erect, densely covered with spreading to ascending short and long straight to tangled hairs c. 0.4-2 mm long. Inflorescence a dense raceme, cylindrical, c. 6 cm long and 3 cm wide, dense, many flowered. Bracts c. 10-14 mm long and 6-7 mm wide, thin, glumaceous, ovate, acuminate, glabrous, scarcely ciliate on the upper margin. Calyx c. 15 mm long, at first tubular, then ventricose, later strongly inflated, c. 6 mm wide, pale purplish, in upper part purple, densely covered with short and very long hairs 0.3-2 mm long; teeth subulate, c. 5 mm long, inner side covered with short spreading white hairs. Petals violet. Standard c. 23 mm long; limb panduriform, upper part c. 8 mm wide, sharply constricted in the middle, at the base obtusely auriculate-angular, with cuneate claw, minutely acuminate at apex. Wing c. 20 mm long; limb oblong-elliptic, c. 9-10 mm long and 3-3.5 mm wide; auricle short; claw 10 mm long. Keel c. 16-17 mm long; limb elliptic, c. 6.5 mm long and 3 mm wide; auricle short; claw c. 9 mm long. Ovary pilose, sessile; style glabrous. Pods (immature) ellipsoid, pilose, 5 mm long, 3 mm wide, densely hairy.

Typus. Fars: Bavanat, Sarab-e Simakan, 2500 m, 3.5.2003, Teyebi Khorrami s. n. (hol. TARI; Iso. Fars).

Systematic position. *A. simakanensis* very closely related to *A. straussii* which is originally described as a species within *A. sect. Hymenostegis* Bunge. Both species are characterized by wide bracts and hyaline to membranous stipules, inflated calyx and long teeth. The main difference between these species is in flower dissection structure and inflorescence shape which is globose, in *A. straussii* with several dense flowers in a short

dense axis. *A. simakanensis* has a hyaline papery stipules and cylindrical inflorescence, more elongating in fruiting time.

Distribution: Sect. *Hymenostegis* with 44 species is widely distributed in NW, W and central part of Iran. In eastern part we know only *A. chrysostachys* which is distributed from East of Alborz range to Semnan and extends to Khorassan province. In central part of the country few other species are distributed. Majority of the species are endemic to western Iran. Based on the new revision (Podlech & al. 2001) there is no species of the this section recorded from southern Iran including, Fars, Kerman and other provinces. *A. simakanensis* which is described here from province Fars is a geographically isolated species within sect. *Hymenostegis*.

Astragalus khongensis Maassoumi, Joharchi & Podlech, **sp. nov.** sect. *Erioceras*

Diagnosis. Differt ab *A. flabellatus* Podlech foliolis pectinatis (nec flabellatis), calyce 15 mm longo (nec 8-10 mm longo), vexillo c. 27 mm longo (nec 15-16 mm longo); ab *A. versipilus* Rech. f. & Koeie foliolis supra glabris vel subglabris (nec appresse pilosis), pedunculo albo patenter piloso (nec albonigrosque piloso), dentibus calycis c. 1.5 mm longis (nec 3-5 mm longis).

Description. Plants shortly caulescent, 4-5 cm tall, densely furnished with spreading symmetrically hairs 0.8 mm long. *Caudex* up to 5 mm in diameter, mostly with a pluricypital root-crown. *Stem* c. 0.7 cm long; internodes short, c. 0.2 cm long. *Stipules* 3-3.5 mm long, narrowly lanceolate, triangular, subabruptly narrowed, shortly adnate to the petiole, free from each other, densely covered with asymmetrically black and white hairs. *Leaves*

2-2.5 cm long; petiole 1 cm long, like the rachis rather densely covered with spreading white hairs. *Leaflets* 3-4 pairs, obovate to narrowly elliptic, folded, contingent, obtuse or rounded at the base, 6-8 mm long and 2.5-3 mm wide, subglabrous on upper side, densely spreading hairy on lower sides. *Peduncle* 1 cm long, thin, spreadingly hairy. *Raceme* 1-2 flowered. *Bracts* narrowly triangular, acute, 3-4 mm long, with asymmetrically black and white hairs. *Pedicels* 1.5-2 mm long, flowers erect to spreading. Bracteoles absent. *Calyx* 14 mm long, tubular, slightly gibbous at the base, obliquely cut at the mouth, densely covered with asymmetrically black and white hairs; teeth subulate, 2.5 mm long. *Corolla* purplish violet. *Standard* 27 mm long; limb c. 12 mm wide, elliptic, emarginate at the tip, slightly constricted in lower part, gradually narrowed into a long claw. *Wings* c. 20 mm long; limb narrowly oblong, frequently notched at the apex, 9 x 3 mm; auricle c. 1 mm long; claw c. 12 mm long. *Keel* c. 22 mm long; limb obovate-elliptic, subobtusate at the apex, 7 x 3 mm; auricle very short; claw 15 mm long. *Ovary* sessile, linear, glabrous, brownish red; style glabrous. *Legumes* unknown.

Typus. Khorassan: NE. of Birjand, Mansour abad roat to Khong, 1950 m, 2.5. 1995, Faghihnia & Zangoie 25240 (hol. TARI).

Astragalus mahneshanensis Maassoumi & Moussavi, **sp. nov.** e sect. *Stereothrix* Bunge

Diagnosis. Differt ab *A. pseudocapito* Podlech foliolis 13 jugis (nec 6-7 jugis); ab *A. leucothrichus* corolla intense violacea (nec flava), vexillo c. 17 mm longo (nec 22 mm longo); ab *A. hakkariensis* Podlech foliolis 13 jugis (nec 7 jugis).

Description. Dwarf caespitose, c. 10-12 cm tall, densely covered with subappressed to

spreading white hairs on the stipules; peduncles and calyx mixed with short black hairs. Much divided at the root stock, with long and elongated subterranean branches. Stem 4-7 cm long, densely covered with spreading white hairs c. 0.6 mm long, below the stipules mixed with equaling size spreading black hairs. Stipules c. 10 mm long, widely ovate at the base, abruptly attenuate at the apex, densely covered with subappressed to spreading white and black hairs, ciliate on the margin, at the base c. 1 mm adnate to the petiole, behind the stem vaginate-connate up to 2 mm. Leaves c. 2.5 cm long; petiole short, c. 7 mm long, both petiole and rachides densely covered with spreading long and short hairs, c. 0.4-1 mm long. Leaflets 12-13 pairs, overlapped, touching each other, elliptic, c. 7 mm long and 5 mm wide, both sides covered with spreading white hairs, obtuse at the apex, margine cartilaginose, reddish. Peduncles 2.5-3.5 cm long, densely covered with double induments long and short spreading white hairs c. 0.6-1.7 mm long, below inflorescence mixed with few black hairs. Inflorescence spherical, globose, c. 3-4 cm in diameter, densely many flowered. Bracts membranous, narrowly triangular, c. 14 mm long, densely covered with white and very few black subappressed hairs. Calyx tubular, membranous, c. 13 mm long, covered with long white hairs; teeth subulate, reddish, c. 7.5 mm long, covered with very long white hairs c. 1.2 mm long somewhat mixed with few black hairs, inner side glabrous. Corolla dark violet. Standard c. 17 mm long; limb elliptic, c. 8 mm wide, emarginate at the apex, at the base subabruptly passing into very short claw. Wings c. 13 mm long; limb elliptic, c. 7 mm long and 2.5 mm wide; auricle 1.5 mm long; claw c. 6.5 mm long. Keel c. 11 mm long; limb elliptic, obtuse at apex, c. 4.5 mm long and 2.5 mm wide; claw 7 mm long. Ovary sessile, pilose. Pods ellipsoid, densely covered with long hairs c.

1.6 mm long and short tangle hairs, laterally compressed, c. 9 mm long, 3 mm wide and 3 mm high, ventrally carinate, dorsally sulcate, opening from the base, fully bilocular.

Typus. Zanjan: Mahneshan, N. W Alam Kandi village, 2950 m, 30.05.1381 (Persian calander), Moussavi 3957 (hol. TARI; Iso. Zanjan Research Center).

Astragalus magnibracteatus Maassoumi & Maroofi, **sp. nov.** e sect. *Acidodes*.

Diagnosis. Valde affinis *A. titziae* Ghahreman & Zarre sed differt inflorescentiis dense glomeratis (nec simplicis), 3.5–4 cm (nec c. 2.5 cm) latis, et petalis albis (nec lilacinis).

Description. Dwarf cushion-forming shrublets, 15–25 cm tall, very densely branched at base. Hairs exclusively white, on the calyx up to 3.5 mm, otherwise 0.1–1 mm long. Stem from a prostrate base ascending, 1–3 mm diam. in first year, growing 1–7 cm per year, below stipules glabrous; old stems lacking remainder of last year's thorns and stipules. Stipules membranous, hyaline, yellowish white, 5–11 mm long, with 3–5 parallel nerves, lanceolate, acuminate, 3–5 mm adnate to the petiole, otherwise only at the base connate, sparsely furnished with long appressed straight hairs, soon glabrescent, ciliate at margins. Leaves 0.8–6 cm long; rachides crowded, rigid, \pm thin or rarely thick, sparsely covered by long and short appressed to subappressed simple hairs, soon glabrescent; petiole 0.3–2.5 cm long (1/4–1/2, mostly 1/3, as long as the rachid); terminal spine 1–2 times longer than the uppermost leaflet pair; leaflets 4–6 (–7) pairs, light green, strongly complicate, 3.5–12 mm long and 1–3 mm wide, narrowly oblong-elliptic to elliptic, obtuse, often minutely mucronulate, both surfaces sparsely furnished

with subappressed simple hairs to glabrous as whole. Inflorescence glomerate, dense, globose to ovate, 1.5–4 cm diam., composed of 5–12-flowered axillary clusters. Bracts membranous, yellow, 8–12 mm long and 6–9 mm wide, outer ones widely elliptic to orbicular, inner ones elliptic to oblong, rounded at apex, shortly appiculate, ciliate at margins, glabrous otherwise. Bracteoles absent. Calyx thinly membranous, \pm firm, yellowish green to whitish, straw colour at teeth, tubular, 12–15 mm long, with 12–17 parallel nerves, densely to sparsely villous; teeth 7–9 mm long, 1.2–1.5 times as long as the tube, from a short triangulate base filiform. Petals white to creamy, claws of wings and the keel at the base or up to 1.5 mm adnate to staminal tube. Standard 16–19 mm long; limb scarcely delimited from claw, 8–10 mm long and 6–6.5 mm wide, elliptic, obtusely broader than upper part at the base, shallowly retuse at apex. Wings 15–17 mm long; limbs 6–7 mm long and c. 2 mm wide, oblanceolate-oblong, often minutely mucronulate at tip; auricle 0.4–1 mm long; claw 8–9 mm long, slightly longer than limb. Keel 14–15 mm long, shorter than wings; limb 5–6 mm long and 2–3 mm deep, oblong-triangulate, with \pm rectangular lower edge and straight upper edge, very minutely mucronulate at apex; claw 7.5–8 mm long. Stamens 13–14 mm long, the free part 2.5–3 mm long. Ovary 13–16 mm long, shortly stipitate; style 10–11 mm long, up to lower half hairy. Fruits immature, probably dorsi-ventrally compressed. Seeds immature.

Typus. Iran, prov. Kurdistan, Bijar, 3 km up to Khanbagi village, 1980 m, 16.6.2002, H. Maroofi & M. Naseri 3814 (TARI).

Systematic position. *A. magnibracteatus* is very closely related to *A. titziae* Ghahreman & Zarre, which is originally described as an

isolated species within *A. sect. Acidodes* Bunge (Ghahreman & Zarre, 1994). Both species are characterized by wide bracts, a thin but relatively firm calyx and long calyx teeth. The main difference between these species is in structure of inflorescence which is glomerate and consist of several dense paraclades close together and more than 3.5 cm diam. in *A. magnibracteatus*, while consist of separated paraclades and not wider than 2.5 cm in *A. titziae*.

Distribution. *A. magnibracteatus* is known only from a locality near the town Bijar in W Iran, while its closest relative, *A. titziae*, is locally endemic to NE Iran near Firuzkuh. The new species grows also at an altitude range typical for *A. titziae* (1900–2800 m). Such a disjunctive distribution pattern is known for several other species among thorny *Astragalus* species as for example in *A. sect. Microphysa*, in the case of *A. demavendicola* Bornm. & Gauba with one subspecies (subsp. *demavendicola*) distributed around Firuzkuh in NE Iran and one subspecies (subsp. *microphysopsis* Tietz) distributed in W Iran in provinces Hamadan, Kermanshah and Lorestan (Tietz 1988; Podlech et al. 2001).

Notes. *Astragalus sect. Adiaspastus* Bunge s. l. (Zarre, 2000) with 40 species is one of the largest sections among the thorny *Astragalus* species, which is mainly distributed in the Iranian highland. There are controversial opinions on the delimitation of the section, so in its strictest sense it is separated from *A. sect. Acidodes* Bunge, *A. sect. Brachycalyx* Bunge, and *A. sect. Hystrix* Bunge (Maassoumi, 1998, 2000), but in its broadest sense includes all these small sections (Zarre, 2000) *A. titziae* Ghahreman & Zarre was described as an isolated species within *A. sect. Acidodes* based on the unique shape of the bracts (Ghahreman & Zarre, 1994) from NE Iran. *A.*

magnibracteatus Maassoumi & Maroofi, which is described above, is the second species of this section with such large bracts.

Astragalus montis-parrowii Maassoumi & Nemati, **sp. nov.** e sect. *Aegacantha* Bunge

Diagnosis. Inter speciebus e sect. *Aegacantha* Bunge petalis albis (nec flavis), dorso dense piloso et leguminibus unilocularis, polyspermis insignis.

Description. Dwarf cushions, 10–20 cm tall and 30–40 cm in diameter, spiny, hemispherical, ascending or procumbent, densely branched at the base. Hairs exclusively white, 0.5 mm long. Stem from a prostrate base ascending, 6 mm long, much divided at the base, intricate, at the base densely covered with remnant stipules and petioles of the last years. *Stipules* hyaline- membranous, c. 9 mm long, reticulate with distinct nerves, at the base c. 4 mm adnate to the petioles and free from each others, at the base densely covered with appressed white hairs, later glabrescent, ciliate at margins. *Leaves* 5 cm long; rachides crowded, rigid, spiny, densely covered by short appressed to subappressed hairs; petiole 18 mm long; leaflets 7 pairs, greyish green, strongly complicate, 4.5 mm long and 2 mm wide, narrowly elliptic, mucronulate at tip, both surfaces covered by appressed to subappressed white hairs, c. 0.5 mm long. *Inflorescence* axillare, with 4 flowers, peduncle short, c. 3–4 mm long, densely covered with spreading hairs. *Bracts* hyaline, c. 5 mm long, glabrous to sparsely pilose, ciliate at margins. *Bracteoles* absent. *Calyx* tubulare to turbinate, whitish, c. 10 mm long, densely covered with spreading white hairs; teeth 4 mm long. Petals white, densely hairy. *Standard pilose*, c. 16.5 mm long; limb c. 4 mm wide, constricted in the middle part, acute at apex, gradually narrowed toward the claw.

Wings pilose, c. 15 mm long; limbs narrowly elliptic, 2.5 mm long and acute at tip; auricle 1 mm long; claw 8 mm long. *Keel* pilose, 14 mm long; limb 2.5 mm wide, ovate; claw 6.5 mm long. Ovary sessile, densely hairy; style glabrous. *Fruits* sessile, ellipsoid, densely covered with spreading white hairs, 8 mm long, 3 mm high and 2.5 mm wide, polysperms, laterally compressed, dorso-ventrally carinate, unilocular.

Typus. Kermanshah: Parrow mountain, S. slope, 06.07. 1998, 3100-3500 m, Nemati, Ghaderi & Esfandiari 6108 (hol. TARI; iso. Kermanshah Research Center).

Systematic position: New species apparently belonging to sect. *Aegacantha* Bunge. This section with approximately 40 distinct species are widely distributed in Afghanistan, Pakistan and Tadzhikistan. Recently based on the new collection from Khorassan area *A. leiosemius* has been recorded from eastern part of Iran (Maassoumi et al., 2004, in press). The sharp disjunction within original distribution in center of diversity and the new described species is very important. The new species with unilocular pods and hairy corolla seems to belong to a new distinct section which should be separated from sect. *Aegacantha* Bunge by different taxonomical characters.

Astragalus qaratchaicus Maassoumi, Ghahremani & Javadi, **sp. nov.** sect. *Incani* DC.

Diagnosis. Inter speciebus e sect. *Incani* DC. Legumibus anguste oblongo-ellipticis, erectis et sessilibus insignis.

Description. Plants 36 cm tall, densely furnished with subappressed symmetrically hairs 0.4-0.5 mm long. Caudex up to 15 mm in diameter, mostly with a pluricipital root-

crown, branches short, thick, covered with blackish remnants of old stipules and petioles. Stipules 10 mm long, triangular, adnate to the petiole for 5 mm, densely hairy. Leaves 17 cm long; petiole 10 cm long, like the rachis finely striate, c. 2 mm thick, sparsely to rather densely with white hairs. Leaflets 5-6 pairs, narrowly ovate to elliptic, attenuate at the base, acute to more rarely rounded at the apex, c. 10-24 mm long and 4-10 mm wide, loosely to rather densely, more rarely sparsely appressed hairs on both sides, often spotted with minute dark reddish dots. Peduncle 10-14 cm long, strong, up to 3.5 mm thick, angularly sulcate, loosely to sparsely covered with black and white appressed hairs. Raceme at first rather densely many flowered, in fruit mostly strongly elongated, 27 cm long. Bracts narrowly ovate, acute, 2.5-3 mm long, with white and sometimes with black hairs. Pedicels 2-3 mm long, flowers erect. Bracteoles filiform, c. 1 mm long, at the base of calyx, permanent or caducous. Calyx 8 mm long, tubular, slightly gibbous at the base, obliquely cut at the mouth, loosely black and sometimes also few white hairs; teeth triangular, 0.7 mm long, inner side densely covered with simple black hairs. Corolla unknown. Legumes narrowly oblong, erect, sessile, tapering at the apex into a straight beak up to 2-3 mm long, 20-23 mm long, 3 mm high, 3.5 mm wide, straight, carinate ventrally, slightly to distinctly grooved dorsally; valves brownish, loosely to densely covered with black and white appressed to subappressed mediofixed hairs, at the base rapidly glabrescent; fruit completely bilocular.

Typus. Azarbayejan: Sahand, Qara-chai, 1800 m, Nohrli 15053 (hol. TARI).

Astragalus rubriphysa Maassoumi & Tayebi Khorrami, **sp. nov.** e sect. *Microphysa*

Diagnose. Affinis *A. fragifero* Bunge sed differt pedunculis ad 1.5 cm longis (nec 2–9 cm), dentibus calycis 3.5–5 mm longis (nec ad 3.5 mm), et petalis calyceque atropurpureis (nec lacteis vel rubris).

Description. Dwarf cushions, 10–20 cm tall, densely branched at the base. Hairs exclusively white, 0.1–1.5 mm long, mostly strongly appressed. Stem from a prostrate base ascending, 1–3 mm diam. in first year, growing 1–5 cm per year, below stipules densely appressed villous, soon glabrescent; old stems covered by remainder of last years' thorns and stipules. *Stipules* membranous, hyaline at margins, yellowish white, with a curved purple spot, 2–6 mm long, with 3–5 parallel nerves at base and one main nerve at free part, lanceolate-triangular, acuminate, 1–3.5 mm adnate to the petiole, otherwise only at the base connate, densely or sparsely furnished with long adpressed straight hairs, soon glabrescent, ciliate at margins. *Leaves* 1.5–4 cm long; rachides crowded, rigid, ± thin or thick, densely covered by short tomentose hairs, gradually glabrescent; petiole 0.5–1.5 cm long (1/4–1/2, mostly 1/3, as long as the rachis); terminal spine 1–3 times longer than uppermost leaflet pair; leaflets 3–10 pairs, greyish green, strongly complicate, 2–6 mm long and 1–3 mm wide, narrowly obovate, elliptic to widely elliptic or rarely orbicular, obtuse at tip, both surfaces covered by double indumentum composed of densely tomentose short hairs up to 1 mm long and some subappressed straight longer ones (up to 1.5 mm). *Inflorescence* non-glomerate, with densely globose, 2–3.5 cm diam., composed of 15–25 flowers. *Bracts* membranous, yellow, 1.5–3 mm long, outer ones ovate to broadly ovate, inner ones narrowly ovate to oblong, acuminate at tip, with dense appressed short hairs, ciliate at margins. *Bracteoles* absent.

Calyx papery, yellowish to whitish on lower half, purple on upper half, immediately inflating after anthesis, at flowering time tubular, 8–12 mm long and 3.5–5 mm diam., at fruiting time widely elliptic to spherical, 12–16 mm long and 6–10 mm diam., with 10–15 parallel nerves, densely to sparsely villous; teeth 3.5–5 mm long, as long as or half as long as the tube, subulate. Petals dark purple, claws of wings and the keel only at the base adnate to staminal tube. *Standard* 7–12 mm long; limb widely obovate to orbicular, 4–6.5 mm diam., retuse at the apex. *Wings* 7–11 mm long; limbs 3.5–4.5 mm long and c. 2 mm wide, oblanceolate-oblong, obtuse at tip; auricle 0.3–0.8 mm long; claw 8–9 mm long. *Keel* 7–11 mm long, shorter than wings; limb 3–4 mm long and 1.5–2.5 mm deep, obovate, with ± rectangular lower edge and straight upper edge, very minutely mucronulate at apex; claw 5–7.5 mm long. *Stamens* as long as the keel, the free part 1–2 mm long. *Ovary* with densely appressed short sericeous hairs, sessile; style 5–7 mm long, up to lower third hairy. *Fruits* laterally compressed, 3–5 mm long, from lateral view oblong to almost square. *Seeds* single in each pod, kidney shaped, not completely mature.

Typus. Iran, prov. Fars, Jahrom, Khavran to Jalalabad village, 1300 m, 30.4.2001, Ghanbarian 95 (hol. TARI).

Systematic position. Among the natural groups recognized for *A.* sect. *Microphysa* (Tietz, 1988), *A. rubriphysa* must be located in the group *A. microphysa* close to *A. fragiferus*. No species of this group possesses dark purple petals. Short peduncles and inflorescences as long as the leaves are most characteristic features of this species which connect it to *A. microphysa*. However, the latter has short calyx teeth (2–3 mm against 3.5–5 mm in *A.*

rubriphysa) and larger bracts (3–5 against 1.5–3 mm in *A. rubriphysa*).

Distribution. Among the species of *A. microphysa* group, *A. rubriphysa* exhibits an extreme southern distribution pattern. The closest relative of *A. rubriflorus*, i. e. *A. fragiferus*, is distributed most southern up to Abadeh (prov. Fars) at least 300 km distant from *A. rubriflorus*.

Notes. *Astragalus* sect. *Microphysa* is a relatively small natural group within *Astragalus*, including 12 species distributed mainly in Zagros mountain range in Iran. The species of this section are characterized with short hairs, inflating fruiting calyces and relatively small flowers (Tietz, 1988; Podlech et al. 2001). Although *A.* sect. *Microphysa* Bunge as endemic section to Iran is treated recently (Podlech et al. 2001), among new collections from SW Iran we found again a new species belonging to this section.

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