

NOTES ON THE GENUS ASTRAGALUS L. (LEGUMINOSAE) IN IRAN III, NEW RECORDS AND NEW SPECIES

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Astragalus eugenii, *A. kabristanicus*, *A. orbiculatus*, and *A. takhtadjanii* are reported for the first time from Iran. *Astragalus absentivus*, *A. galbineus*, *A. inquilinus*, *A. leonardii*, *A. neo-mobayenii*, *A. patrius*, *A. rivashensis*, and *A. typhaeformis* are described as new species from Iran. Relatives, affinities and characteristic differences of the new species are explained.

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مطالعاتی درباره جنس گون (Astragalus) در ایران (۳) ، گونه‌های جدید

از: علی اصغر رمک معصومی

گونه‌های زیر برای اولین بار از ایران گزارش داده می‌شوند .
Astragalus eugenii, *A. kabristanicus*, *A. orbiculatus*, *A. takhtadjanii*
گونه‌های زیر بعنوان گونه جدید نامگذاری و شرح داده می‌شوند .
Astragalus absentivus, *A. galbineus*, *A. inquilinus*, *A. leonardii*, *A. neo-mobayenii*, *A. patrius*, *A. rivashensis*, *A. typhaeformis*
گونه‌های وابسته ، مشابه و اختلافات شاخص گونه‌های جدید توضیح داده می‌شود .

INTRODUCTION

In the course of the identification of the genus *Astragalus* L. in the Central Herbarium of Iran. (TARI), several new species and new records to Iran were recognized. The new species are described and new records are explained. All materials which are explained in the text are preserved in the herbarium of TARI, duplicates partly in the hb. PODLECH.

NEW RECORDS

Astragalus (*Malacothrix*) *eugenii* Grossh.

Azarbayejan: 19 – 20 km from Ahar to Tabriz, 1600 – 1700 m, 24 . 6 . 1986, Maassoumi & Abouhamzeh 56960.

Astragalus (*Malacothrix*) *kabristanicus* Grossh.

Azarbayejan; 27 km from Salmas to Oroumieh (Ghoshchi neck). 1650 m, 26 . 6 . 1986, Maassoumi & Abouhamzeh 57006.

This species is close to *A. comosus* Bge. in some characters

Astragalus (*Caprini*) *orbiculatus* Ldb.

Khorasan: Ghaen road, Gonabad, near Khezri, Ayatollahi & Zangui 14368 (TARI).

Astragalus (*Malacothrix*) *takhtadjanii* Grossh.

Azarbayejan: 14 km from Khalkhat to Kivi, Anavis village, 1680 m, 16 . 6 . 1980 Mozaffarian & Nowrozi 34164; 27 km from Khalkhal to Kivi 1500 – 1650 m, 16 . 6 . 1980, Mozaffarian & Nowrozi 34164; 27 km from Khalkhal to Kivi 1500 – 1650 m, 16 . 6 . 1980, Mozaffarian & Nowrozi 34174.

NEW SPECIES

Astragalus absentivus Maassoumi, sp. nov. e sect. *Caprini* DC.

Plantae perennes, acaules, 5 – 7 cm altae . Stipulae 5 – 7 mm longae, glabrae, basi per 2 – 3 mm petiolo adnatae. Folia 5 – 7 cm longa, petiolus 1 – 3 cm longus, sicut rachis dense brevissime velutinosa. Foliola 5 – 6 juga, obovato - elliptica vel leviter rotundata, 10 – 15 mm longa et 7 – 14 mm lata, apice retusa vel breviter emarginata basi truncata vel sensime cordata, supra in versus marginem brevissime appresse pilosa, subtus dense subpatenter pilosa. Inflorescentiae radicales, sessile, 4 – 5 florum, pedicelli 4 – 6 mm longi pilosi. Bractae lineares, 3 – 5 mm longae, pilosae. Calyx tubulosus, basi distincte

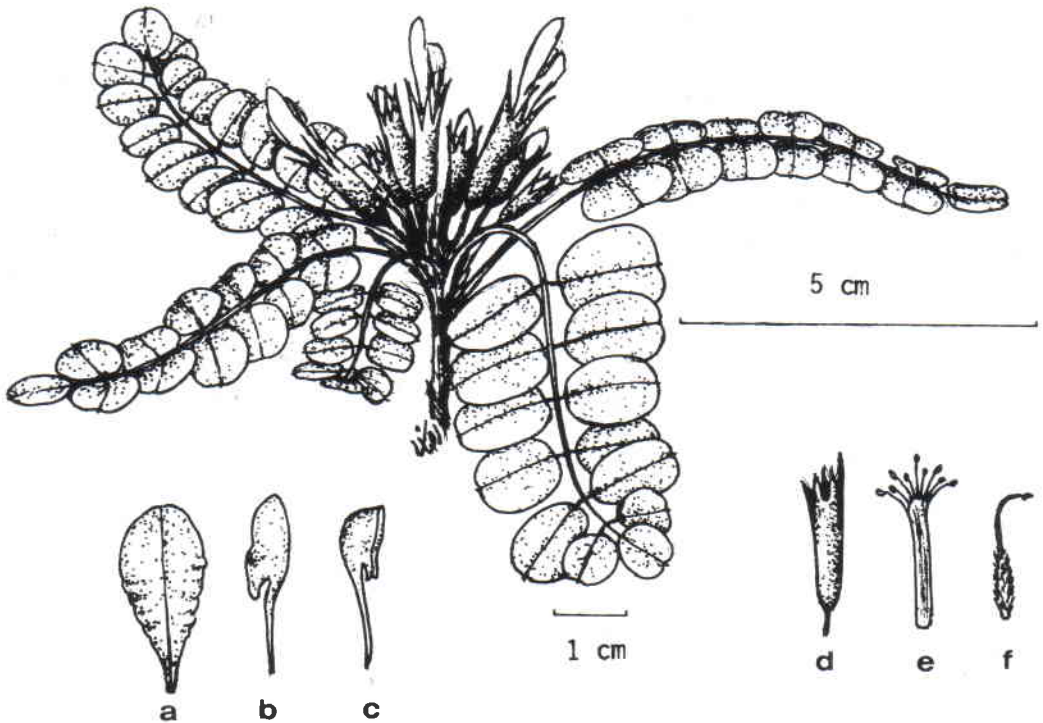


Fig. 1. *Astragalus absentivus*, habit. —a. Standard. —b. Wing-petals. —c. Keel. —d. Calyx. —e. Staminal tube. —f. Ovary.

gibbosus, dense brevissime patenter pilosus, 17 — 18 mm longus; dentibus subulatis ca. 4 mm longis. Corolla rubra (in sicco), pilosa. Vexillum ca. 24 mm longum, extus brevissime sparse pilosum; lamina oblongo - elliptica, ca. 11 mm longa, apice leviter incisa basi ea unguo leviter contracta. Alae 22 mm longae; lamina oblonga, apice versus attenuata basi distincte auriculata, auricula ca. 2 mm longa; ungue laminam paulo longiore. Carina 21 mm longa; lamina

oblique oblongo - curvata, apice acutiuscula basi auriculata; ungue lamino duplolongiore. Ovarium pilosum, basi ca. 3 mm longe stipitatum; stylo substigmatate glaber. Legumen ignotum.

Typus: Quazvin: 16 km to Taleghan, 2020 m, 13.5.1974, Babakhanlou & Amin 18101 (Hol. TARI).

The new species differs from *A. imbicillus* Maassoumi & Podl. in having much longer leaflets, and in the upper surface with short hairs (not glabrous). Ovary hairy (not glabrous).

Astragalus galbineus Maassoumi, sp. nov.
e sect. *Malacothrix* Bge.

Plantae perennes 28 - 30 cm altae, acaulis, vel caule abbreviato ca. 4 cm longo. Stipulae lanceolatae, ca. 10 mm longae, basi per 2 mm petiolo adnae, inter se connatae, apicem versus abrupte attenuatae, albo - nigrosque appresse pilosae. Folia 14 - 15 cm longa, petiolo 4 cm longo, sicut rachis subpatenter albo - nigrosque piloso. Foliola 10 - 12 juga, oblongo - elliptica, 10 - 15 mm longa et 4 - 5 mm lata, apice retusa vel leviter emarginata, basi subcordata, utrinque brevissime appresse pilosa. Inflorescentiae singulares, terminales, cylindratae, multiflorae, pedunculis 15 cm longis,

sulcatis, in parte inferiore albo-pilosis, in parte superiore nigro patenter pilosis imixtis. Bractee lineares, ca. 10 mm longae, dense albo - nigrosque patenter hirsutae. Calyx 16 - 17 mm longus, basi leviter inflatus, dense albo - nigrosque hirsutus, dentibus linearibus ca. 5 mm longis. Corolla violacea (in vivo) glabra; vexillum 18 - 19 mm longum; lamina rhomboidea, in parte mediano dilatata ca. 9 mm lata apicem versus ligulata, antice profunde emarginata vel biloba, basi abrupte contracta. Alae 18 mm longae; lamina oblonga, apicem versus dilatata, antice oblique emarginata, base auriculata; auricula ca. 2 mm longa, ungue laminam aequantes. Carina 15 mm longa; lamina elliptico - curvata, apice acuta, basi leviter auriculata, ungue laminam aequantes. Ovarium pilosum, basi sensim stipitatum. Legumen oblongum ca. 10 mm longum et ca. 4 - 5 mm latum, dense sericeum et brevissime albo patenter pilosum, apice rostratum, basi breviter stipitatum, ventre rotundatum dorso carinatum, complete biloculare.

Typus: Lorestan: Khoramabad, Dorud, Oshtorankuh, 2150 m, 6.5.1973, M. Riazi 9692 (Hol. TARI).

Differs from *A. typhaeformis* Maassoumi in leaflets characters which are 10 - 12

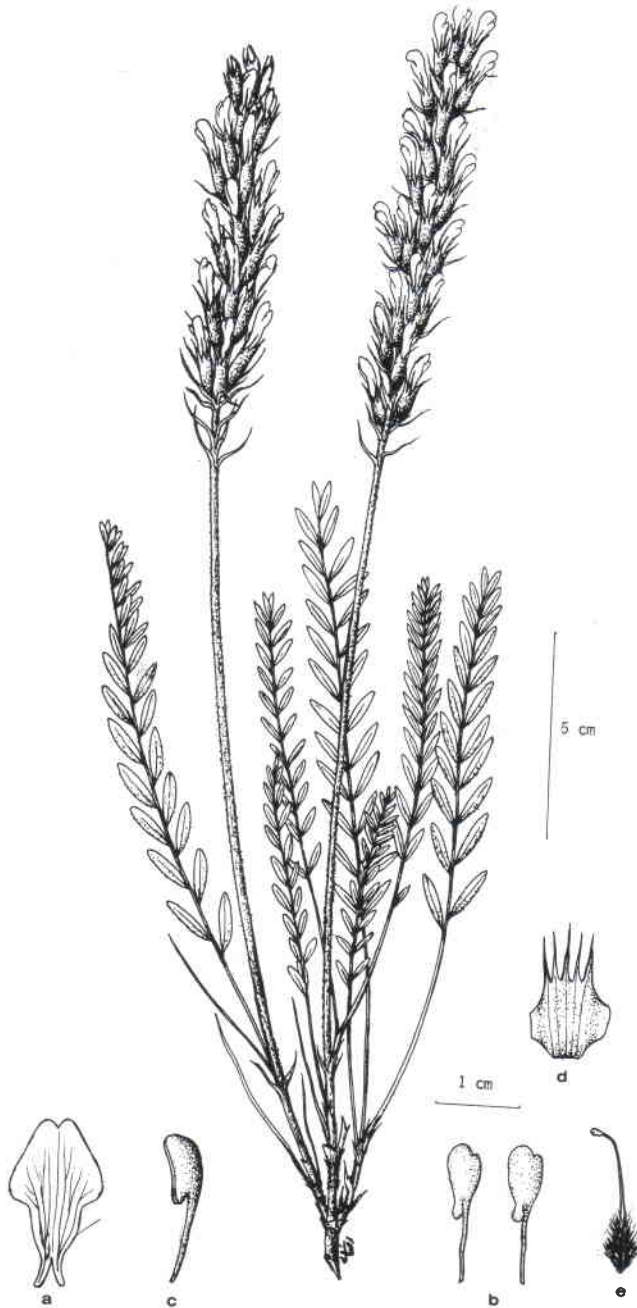


Fig. 2. *Astragalus galbineus*, habit. —a. Standard. —b. Wing-petals. —c. Keel. —d. Calyx; —e. Ovary.

pairs (not 18 – 20 pairs) and covered with appressed hairs (not spreading hairs).

Astragalus inquilinus Maassoumi, sp. nov.
e sect. *Caprini* DC.

Plantae perennes, 25 – 30 cm altae, acaules vel caule abbreviato ca. 3 – 4 cm longo. Stipulae lanceolatae, glabrae, margine ciliatae, ca. 12 – 17 mm longae, basi per 2 – 4 mm petiolo adnatae. Folia 10 – 20 cm longa. Petiola abbreviata, ca. 2 – 3 cm longa, sulcata, sicut rachis patenter pilosa. Foliola 18 – 20 juga, lineari - lanceolata, 14 – 20 mm longa et 4 – 6 mm lata, apice acutiuscula, basi cuneata, supra glabra, subtus patenter pilosa. Inflorescentiae pedunculatae, 18 – 20 florum, pedunculo 5 – 7 cm longo, pedicelli 4 – 5 mm longi. Bracteae lineari - lanceolatae, 7 – 10 mm longae, glabrae, margine ciliatae. Bracteolae binnae, minutae, ad basim calycis adnatae, ciliatae, ca. 2 mm longae vel absentae. Calyx tubulosus, pilosus, basi manifeste gibbosus, 14 – 15 mm longus, dentibus linearibus $1/3$ tubo attingentibus. Corolla glabra, flava. Vexillum 24 mm longae; lamina late obovata, ca. 11 mm lata, apice leviter emarginata. Alae 20 mm longae; lamina oblonga, apicem versus attenuata, basi auriculata, ungue laminam aequantes. Carina 16 mm longa; lamina

recta, apice acuta, basi leviter auriculata, ungue lamina duplo longiore. Ovarium pilosum, basi ca. 3mm longe stipitatum; stylo substigmatate glaber. Legumen ignotum.

Typus: Hamadan: Avadj, Sultan - bulag mts., 2000 – 2400 m, 12.5.1987, Maassoumi & Mirhosseini 59383 (Hol. TARI).

Differs from *A. multijugus* DC. in the following characters: upper surface of leaflets glabrous (not hairy); calyx teeth much longer; bracts lanceolate, glabrous (not hairy); style glabrous at the below of stigma (not hairy); keel limb erect (not curvate - triangular).

Astragalus leonardii Maassoumi, sp. nov. e sect. *Caprini* DC.

Perennis 25 – 30 cm alta, acaulis vel caule abbreviato 2 – 3 cm longo, ovario excepto glabro. Stipulae 10 – 15 mm longae, lanceolatae, longitudinaliter nervosae, basi 2 – 3 mm petiolo adnatae. Folia 25 – 30 cm longa, petiolo 4 – 6 cm longo indurascens. Foliola 16 – 20 juga, lineari - lanceolata, 12 – 17 mm longa et 2 – 4 mm lata, complicata, apice acuta, basi cuneata. Inflorescentiae radicales, 3 – 5 florum, pedunculo abbreviato. Bracteae lineares, 2 – 3

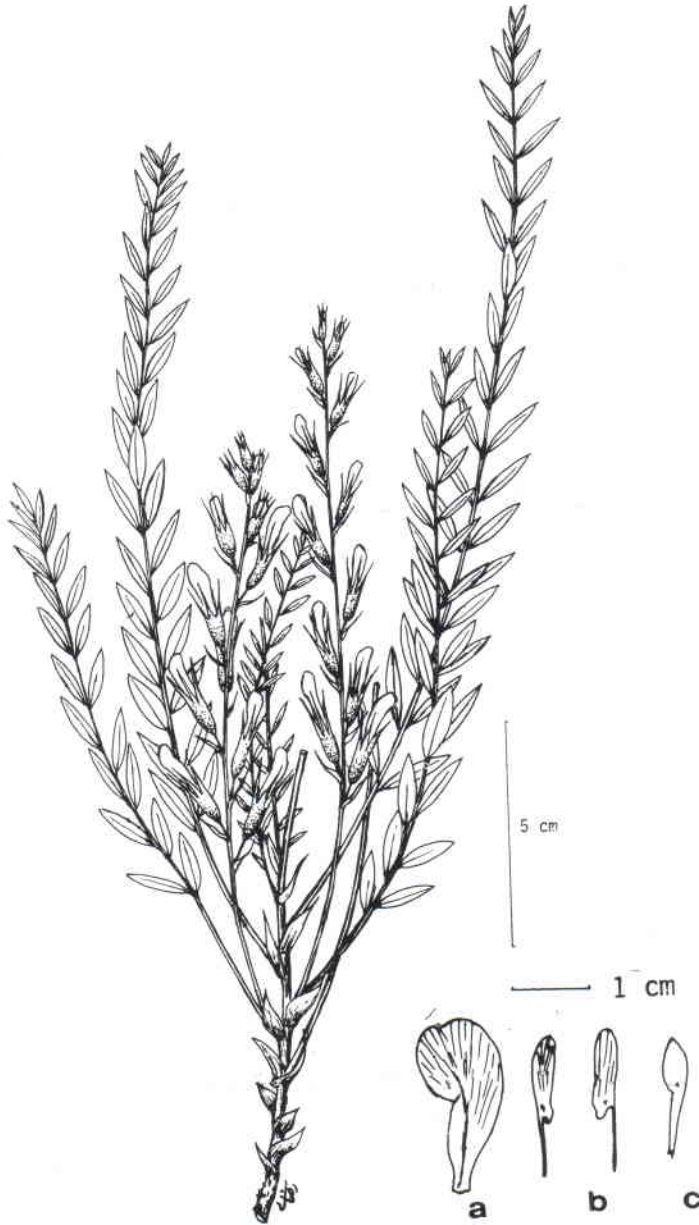


Fig. 3. *Astragalus inquilinus*, habit. —a. Standard. —b. Wing-petals. —c. Keel.



Fig. 4. *Astragalus leonardii*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

mm longae. Calyx 15 mm longus. Corolla flava, glabra. Vexillum 25 mm longum; lamina anguste oblonga, in parte mediano leviter contracta, apice emarginata, basi in ungue contracta. Alae 21–22 mm longae; lamina anguste oblonga, 10 mm longa, antice rotundata, basi auriculata, auricula ca. 1 mm longa, ungue lamina paulo longiore. Carina 16 mm longa; lamina oblique oblonga, curvata, apice acuta, basi breviter auriculata, ungue lamina sesquilingiore. Ovarium pilosum, subsessile. Stylo substigmatate linea pilosa provisa. Legumen sessile, oblongum, 18–20 mm longum, 5–7 mm altum et ca. 4 mm latum, dense pilosum, apice breviter rostratum, ventro carinatum, dorso anguste applanato-rotundatum, fere biloculare.

Holotypus: Tehran: Arak, Hesar, Kuh—e Rasband (UT₃) 2000–3000 m, 18.7.1984, Mozaffarian 48367 (TARI; Iso. Herb. PODLECH).

Differs from *A. aegobromus* by its indurate rachis and not jointed stipules. Leaflets lineare-lanceolate, 16–20 pairs, inflorescence 3–5 flowered (not 5–11). Bracts small, membranaceous, linear. Standard limb narrow oblong (not obovate). From *A. avicennus* Parsa by its indurate rachis, short petals, sessile ovary and pods and by its much shorter and

laterally compressed fruits.

Named in the honour of prof. Dr. J. Leonard, Meise. Belgique, investigator of the southeastern deserts of Iran.

Astragalus neo-mobayenii Maassoumi, sp. nov. e sect: *Caprini* DC.

Perennis, 25–40 cm alta, acaulis vel caule abbreviato 3–4 cm longo, glaberrimo. Stipulae majorae, firme membranaceae, viridiusculae, ad 25 mm longae, late ovatae, basi fere liberae. Folia 25–35 cm longa, sulcata, petiolo 6–9 cm longo. Foliola 5–7 juga, remota, late ovata vel suborbiculare, 15–30 mm longa et 12–27 mm lata, apice truncata vel leviter mucronata, basi truncata vel cuneata; petiolula 2 mm longa. Inflorescentia subradicalis, 7–8 florum. Bractae (14–) 16–20 mm longae, late ovatae vel cymbiformae, pedicelli 6 mm longi, erecti vel patuli, rarim penduli. Calyx tubulosus, basi leviter gibbosus, 16–18 mm longus. Corolla flava, glabra. Vexillum 32–35 mm longum; lamina oblonga, ca. 12 mm lata, antice rotundata, leviter emarginata, basi cuneata. Alae 28–31 mm longae; lamina oblonga, antice rotundata, basi auriculata, ungue lamina sesquilingiore. Carina 22–23 mm longa, lamina oblique triangulari-elliptica, curvata,

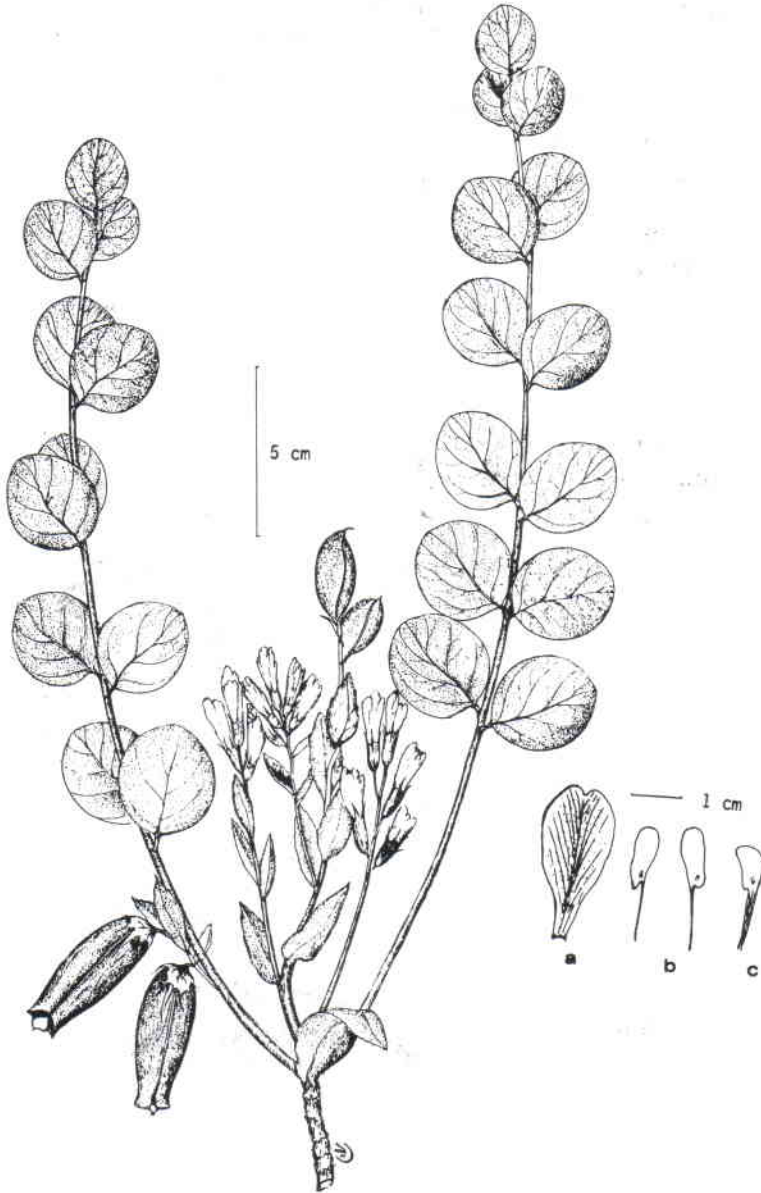


Fig. 5. *Astragalus neo-mobayeni*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

ungue lamina duplo - longiore. Ovari stipite 3 - 4 mm longo suffultum; stylo sub-stigmate glabro. Legumen oblongum, breviter stipitatum, 30 - 45 mm longum, ca. 15 - 17 mm altum et 10 - 13 mm latum, ventro distincte carinatum, dorso rotundatum, leviter carinatum, valvis coriaceis, longitudinaliter rugosus, incomplete biloculare.

Holotypus: Azarbayejan: 50 km from Tabriz to Marand, from Payam to Mishudagh mts. 2000 - 2200 m, 25.6.1986, Maassoumi & Abouhamzeh 56973 (TARI; Iso: Herb. PODLECH).

The new species differs from: *A. ovinus* Boiss. in having the pods which are dorsally rotundate (not carinate); *A. aegobromus* Boiss. & Hohen. by its ovate or orbicular leaflets which are 5 - 6 pairs (not elliptic and 12 - 16 pairs), much bigger fruits and style below the stigma glabrous (not hairy).

Species named in the honour of Mr. prof. Dr. S. Mobayen.

Astragalus patrius Maassoumi, sp. nov. e sect. *Malacothrix* Bge.

Plantae perennes, acaules, procumbentes, 12 - 14 cm longae. Caudex elongatus, multiceps. Stipulae lanceolatae, ca. 5mm

longae, albonigrosque appresse pilosae, basi ca. 1 mm. petiolo adnatae, inter se connatae. Folia 8 - 10 cm longa; petiola 2 - 3 cm longa, sicut rachis albo subpatenter pilosa. Foliola 12 - 17 juga, oblongo - elliptica, 8 - 9 mm longa et 3 - 4 mm lata, apice obtusa, basi cuneata, utrinque appresse pilosa. Inflorescentiae singulares terminales, globosae, 7 - 9 florum, pedunculo 10 - 13 cm longo, inferiore albo appresse piloso, superiore versus inflorescentiam nigrum immixtum. Bractae lineares, ca. 5 mm longae, albo - nigrosque patenter pilosae. Calyx tubulosus, ca. 13 mm longus, dense albo - nigrosque pilosus. Corolla flava (in sicco), glabra. Vexillum 18 - 19 mm longum; lamina oblongo-elliptica, apice leviter emarginata, basi in unguem angustata. Alae 16 - 17 mm longae; lamina anguste elliptica, apice rotundata, basi leviter auriculata; auricula ca. 1 mm. longa, ungue lamina sesquilingiore. Carina 14 mm longa; lamina elliptico - curvata; apice acuta, basi auriculata, ungue lamina sesquilingiore. Legumen sericeo - pilosum, ovoideum, ca. 9 mm longum et 5 mm latum, ventro rotundatum, dorso carinatum, apice rostratum, basi breviter stipitatum, complete biloculare, oligosperme. Semina 2, reniformia, 3 mm longa et lata, brunnea.

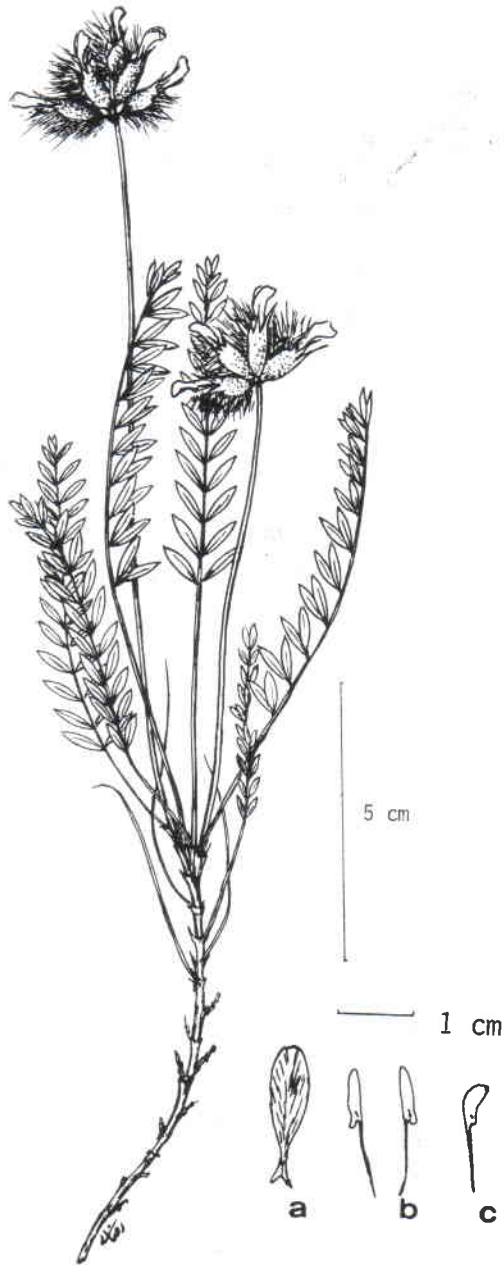


Fig. 6. *Astragalus patrius*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

Typus: Mazandaran: ca. 30 km S. of Ramsar, Shah-e Sefidkuh mountain (VA 3,4), 3100 — 3400 m, 12.7.1984, Assadi & Maassoumi 51297 (Hol. TARI).

Differs from *A. becki* Bornm. in having oblong - elliptic standard limb (not rhomboid) and appressed hairy upper surface of leaflets (not spreading hairy).

Astragalus rivashensis Maassoumi, sp. nov. e sect. *Malacothrix* Bge.

Plantae perennis, 20 — 30 cm alta, caule abbreviato ca. 3 — 4 cm longo. Stipulae lanceolatae, 7 — 12 mm longae, albo-nigrosque pilosae, basi per 2 — 3 mm petiolo adnatae, apicem versus abrupte attenuatae filiformes. Folia 10 — 15 (20) cm longa, petiolo 4 — 5 cm longo, sicut rachis dense patenter piloso. Foliola 8 — 11 juga, oblongo - elliptica, 8 — 17 mm longa et 4 — 6 mm lata, apice obtusa vel retusa, emarginata, supra sparse, subtus dense longe albo pilosa. Inflorescentiae axillaris, cylindratae, multiflorae. Bractae lineariae, ca. 5 — 8 mm longae, albo-nigrosque patenter hirsutae. Calyx 13 — 15 mm longus, albonigrosque patenter hirsutus, dentibus linearibus, 3 — 4 mm, longis. Corolla flava, glabra. Vexillum 20 mm longum, lamina oblongo - elliptica, in parte mediano 7 mm lata, apice rotundata, basi in unguem

abrupte cuneata. Alae 18 mm longae; lamina anguste elliptica, 7 mm longa, apice rotundata, basi auriculata, auricula ca. 1.5 mm longa, ungue lamina duplo longiore. Carina 18 mm longa, lamina oblique elliptica, curvata, apice acutiuscula, basi breviter auriculata, ungue lamina duplo - longiore. Ovarium pilosum. Legumen oblongum, dense albo sericeo hirsutum et pilis brevissime albo patenter immixtis, 10 — 12 mm longum et 5 mm latum, apice rostratum, basi ca. 2 mm longe stipitatum, ventro rotundatum, dorso carinatum. complete biloculare. Semina 4, intense brunnea, reniformia, 4 mm longa et 2 mm lata, alveolata.

Typus: Khorasan, 56 km. from Kashmar to Neyshabour, after Rivash (FE2), 1850 m, 12.6.1981, Assadi & Mozaffarian 35657 (Hol. TARI). Paratypus; Khorasan: 20 km to Kashmar on the road from Neyshabour (EE2), 1800 m, 11.6.1981, Assadi & Mozaffarian 35537 (TARI); Khorasan, mountain N. of Neyshabour, 1450 — 1600 m, 16.6.1981, Assadi & Mozaffarian 35978 (TARI); Khorasan; 14 km from Kashmar to Neyshabour (FE2), 1400 — 1500 m, 12.6.1981, Assadi & Mozaffarian 35621 (TARI).

Differs from *A. protractus* Boriss. in following characters: leaflets 8 — 11

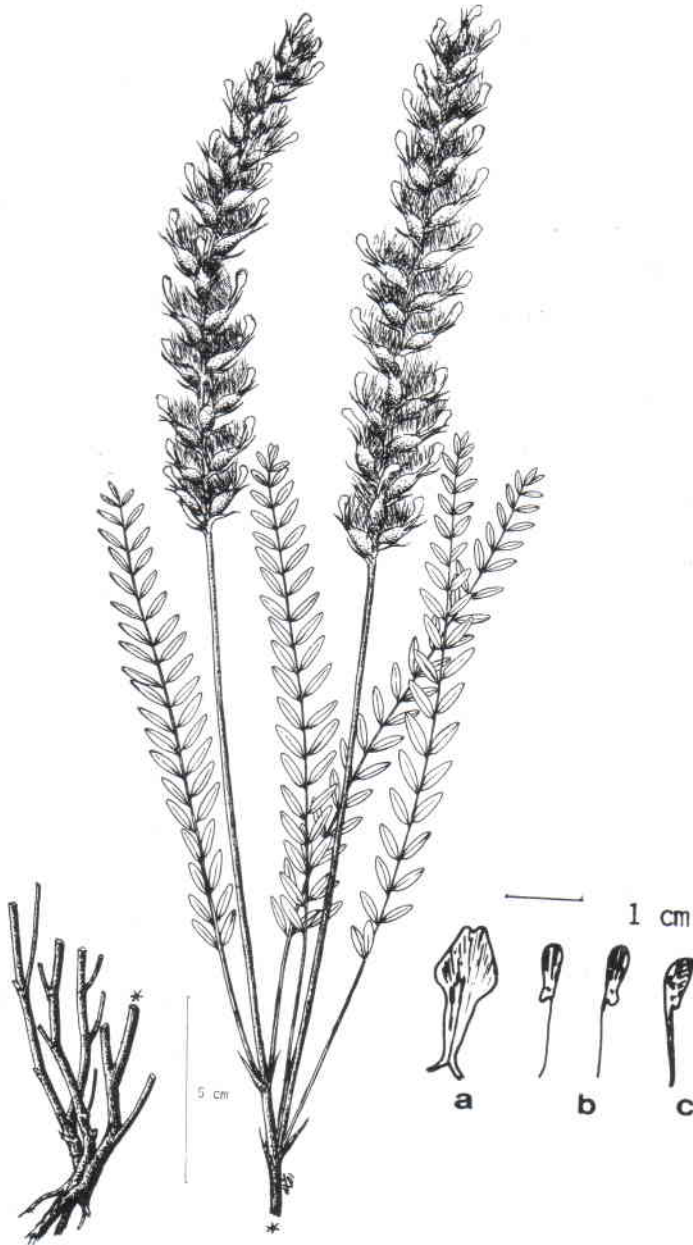


Fig. 7. *Astragalus rivashensis*, habit. — a. Standard. —b. Wing-petals. --c. Keel.

pairs (not 15 — 20 pairs), flowers much shorter, the claw of wing and keel petals twice longer than the limb (not equal), peduncle covered with short spreading hairs (not short and long mixed hairs) and stipules free (not jointed together).

Astragalus typhaeformis Maassoumi, sp. nov. e sect. *Malacothrix* Bge.

Plantae perennes, 35 — 40 cm altae, caulibus ca. 10 cm longis. Stipulae ovatae, vaginatae, 5 — 7 mm latae, apice attenuatae, basi ca. 2 — 3 mm petiolo adnatae, inter se connatae, dense albo-nigrosque hirsutae. Folia 15 — 20 cm longa, petiolo 4 — 5 cm longo, sicut rachis dense patenter albo piloso. Foliola 18 — 20 juga, oblongo-elliptica, 10 — 13 mm longa, 3 — 4 mm lata, apice rotundata vel emarginata, basi cuneata, supra versus marginem sparse pilosa vel glabra, subtus sparse patenter hirsuta. Inflorescentiae axillares, multiflorae, cylindratae, ca. 15 cm longae. Pedunculo 15 cm. longo, sulcato, sparse patenter piloso vel glabrescenti. Bractae lineares, viridiusculae, ca 7 — 8 mm longae, albo-nigrosque hirsutae. Calyx tubulosus, basi leviter gibbosus, ca. 14 mm longus, pilis albo-nigrosque immixtis; dentibus linearibus, 4 — 5 mm longis. Corolla flava (in vivo) demum brunnea, glabra.

Vexillum 21 mm longum; lamina late rhomboidea, in parte mediana ca. 9 mm lata, apice profunde emarginata vel distincte biloba, basi in ungue abrupte contracto. Alae 18 mm longae; lamina elliptica, ca. 7 mm longa, apice rotundata, basi auriculata, auricula ca. 1.5 mm longa, ungue laminam sesquilingiore. Carina 17 mm longa. oblique elliptica, dorso in parte apicali curvato, ungue laminam paulo longiore. Ovarium pilosum, stipitatum. Legumen oblongum, 11 mm longum et 5 mm latum, apice rostratum basi ca. 1 mm longe stipitatum, dense albo sericeo pilosum et pilis albis brevissimis immixtis, ventro rotundatum, dorso carinatum, complete biloculare. Semina 4, reniformia, ca. 3 mm longa et 2.5 mm lata, alveolata.

Typus: Mazandaran: Lar Valley, 2450 — 2550 m, 2.7.1974, Wendelbo & Assadi 13372 (Hol. TARI). Paratypus: Mazandaran: Lar valley, 2450 — 2550, 2.7.1974, Wendelbo & Assadi 13323 (TARI); idem, Wendelbo & Assadi 13254 (TARI).

Differs from *A. kandewanensis* Gilli, inflorescence cylindric (not ovate), standard limb rhomboid (not oblong-elliptic); from *A. mollis* M.B., stipules at 2 — 3 mm of lower part adnate to the petioles (not 5 — 6 mm), leaflets in

upper surface glabrous (not sericeous having short hairs and 20 pairs of leaflets pilose); from *A. aznabjurticus* Grossh. in (not 12 – 13 pairs).

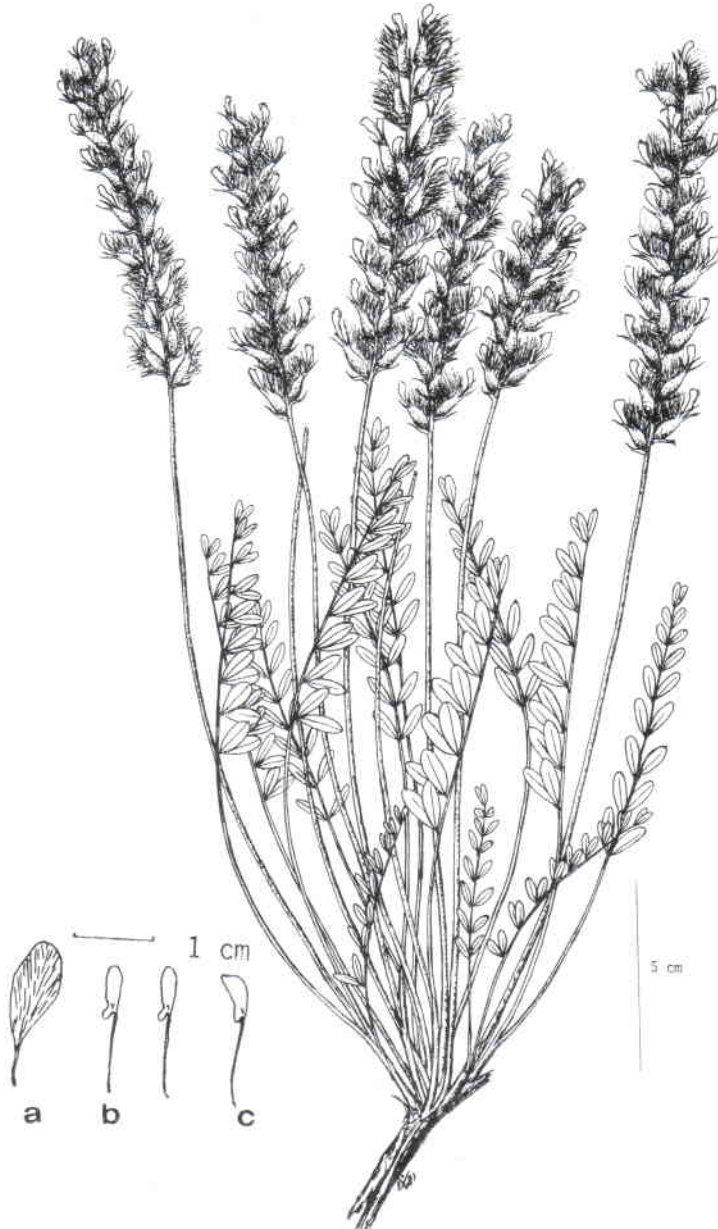


Fig. 8. *Astragalus typhaeformis*, habit. —a. Standard. —b. Wing-petals. —c. Keel.