

## ELEVEN NEW SPECIES AND A NEW SECTION FROM THE GENUS *ASTRAGALUS* (LEGUMINOSAE) IN IRAN

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Ramak Maassoumi, A.A. & Podlech, D. 1988. 12. 31: Some new species and a new section from the genus *Astragalus* (Leguminosae) in Iran. — *Iran. Journ. Bot.* 4(1): 71 – 90. Tehran.

Eleven new species including *Astragalus babakhanloui*, *A. doshman - ziariensis*, *A. facetus*, *A. ghahremanii*, *A. inexpectatus*, *A. iranshahrii*, *A. memnonius*, *A. plagiophacos*, *A. rubrocalycinus*, *A. termeanus*, *A. vessalae* are described from Iran. They are compared with their close affinities. The section *Plagiophaca* is described as a new, the type of this monotypic section is designated as *Astragalus plagiophacos*.

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یازده گونه و یک بخش جدید از جنس گون در ایران

از: علی اصغر رمک معصومی و دیتریش پودلش.

یازده گونه زیر از ایران نامگذاری و معرفی می‌گردد.

*Astragalus babakhanloui*, *A. doshman - ziariensis*, *A. facetus*, *A. ghahremanii*, *A. inexpectatus*, *A. iranshahrii*, *A. memnonius*, *A. plagiophacos*, *A. rubrocalycinus*, *A. termeanus*, *A. vessalae*

این گونه‌ها با گونه‌های مشابه و نزدیک مقایسه می‌شوند. بخش تک گونه‌ای

*Plagiophaca* به عنوان واحد رده‌بندی جدیدی معرفی و گونه *Astragalus plagiophacos* تیپ آن قرار داده می‌شود.

## Introduction

In collaboration of the two authors for the identification of *Astragalus* materials, several new species came to light. These species are described here. For one of these new species a new section "*Plagiophaca*" was recognized which is described here.

*Astragalus babakhanloui* Maassoumi & Podl., sp. nov. Sect. *Malacothrix* Bunge

Differt ab *A. plebeijus* Boiss. foliolis 3 — 6 jugis (nec 7 — 8 jugis) multo majoribus, rachide appresse ad semipatenter piloso (nec pilis brevissimis horizontaliter patentibus obsito), calyce multo longiore.

Plantae perennes, 5 — 15 cm. altae, albipilosae. Caudex gracilis, caudiculis brevibus vel elongatis emittens. Caules nonnulli vel singulares 1 — 5 cm longi, dense pilis appressis ad 0.5 mm longis obtecti. Stipulae membranaceae, inferiores ad 2 mm longae, connato - vaginantes breviter bilobatae, laxae pilosae, superiores triangulari vix vaginantes dense pilosae, omnes petiolo breviter adnatae. Folia 4 — 5 cm longa, petiolo lamina ± aequilongo, sicut rachis dense pilis appressis ad oblique patentibus obtecto. Foliola 3 — 6 juga, anguste elliptica, 7 — 14 mm longa et 3 — 5 mm

lata, apice rotundata basi cuneatim angustata, utrinque densiuscule appresse pilosa. Inflorescentiae axillares, pedunculo 2 — 5 cm longo saepe flexuoso dense appresse ad semipatenter piloso suffultae; racema multiflora primo densa deinde laxiuscula ad 5 cm longa. Bracteae ca. 2 mm longae, anguste ovatae, pilosae interdum nonnullis pilis nigris immixtis. Pedicelli subnulli. Calyx 9 — 12 mm longus, late tubulosus, laxae semipatenter hirsutus, dentibus subulatis tubo paulo longioribus pilis ad 1 mm longis ciliatis. Corolla in viva flava, glabra. Vexillum 12 — 13 mm longum; lamina elliptica, ca. 5 mm lata, apice rotundata vel leviter emarginata, basi cuneatim angustata. Alae 10 — 11 mm longae, lamina oblonga apice rotundata, basi breviter auriculata, ungue ea aequilonga. Carina 8 — 9 mm longa; lamina fere triangulari - elliptica, apice acutiuscula, brevissime auriculata; ungue ea sesquilingiore. Legumen fere ovoideum, ca. 7 mm longum, 4 mm altum et 3.5 mm latum, ventre anguste rotundatum, dorso leviter sulcatum, fere biloculare. Semina 2, ca. 4 mm longa.

Holotypus: Iran, Lorestan: 55 km from Arak to Malayer, 2100 m, margins of field, 15.6.1984, leg. Mozaffarian & Maassoumi 48083 (TARI; Iso: Hb. Podl.).

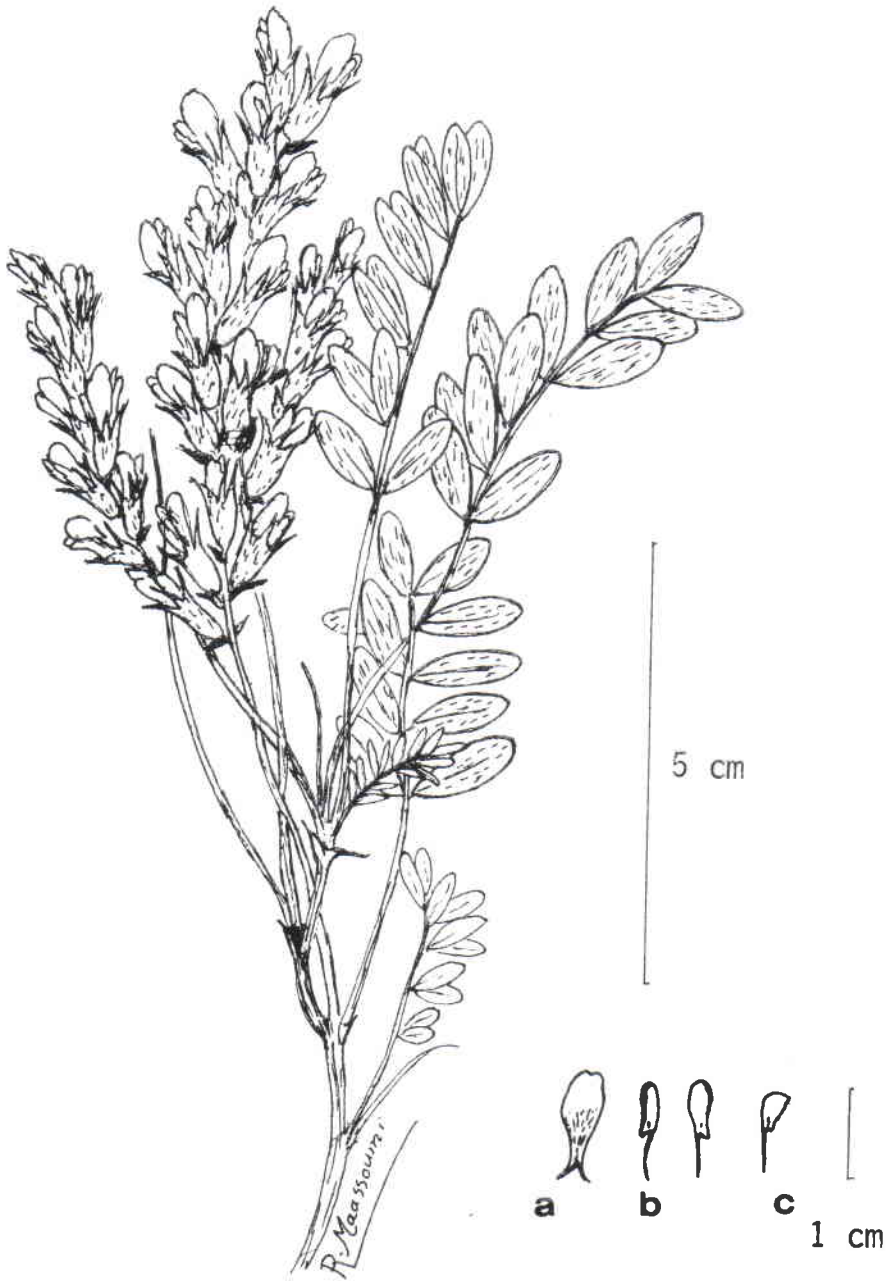


Fig. 1. *Astragalus babakhanloui*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

*Astragalus doshman-ziariensis* Maassoumi & Podl. sp. nov. e Sect. *Stereothrix* Bge.

Differt ab *A. ledinghamii* Barneby, foliolis 4—7 jugis elliptica nec 2—4 jugis lineari-lanceolatis, calycis dentibus longioribus.

Plantae perennes pilis albis obtectae. Caudex multiceps. Caules 5—9 cm longi prostrati dense brevissime patenter hirsuti internodiis inferioribus 5—8 mm longis superioribus 3—5 cm longis. Stipulae 3—4 mm longae basi subliberae, lineari-acuminatae, hirsutae. Folia 3—9 cm longa, petiolo lamina 2 plo brevioribus vel ea aequilongo brevissime patenter hirsuto. Foliola 4—7 juga, elliptica, apice rotundata vel brevissime acuminata, 5—9 mm longa et 2—4 mm lata utrinque dense subappresse hirsuta, interdum complicata. Inflorescentiae in axillis foliorum superiorum dense globosae vel subcylindricae, pedunculo 2—7 cm longo dense brevissime hirsuto suffultae. Bractee ca. 2 mm longae, anguste triangulares. Flore sessiles. Calyx 11—12 mm longus, campanulatus, tubo longe semipatenter hirsuto, dentibus subulatis 7—8 mm longis, tubo ad duplo longioribus, pilis rigidis ad 2 mm longis, distincte ciliatis. Corolla flava, glabra. Vexillum 8—9 mm longum, lamina obovata ca. 3.5 mm lata, apice distincte

incisa, basi cuneatim in unguem angustata. Alae 7—8 mm longae, lamina oblonga, apice rotundata, ca. 3 mm longa, basi breviter auriculata. Carina 6—7 mm longa, lamina oblique elliptico-curvata, apice acutiuscula, basi breviter auriculata, ungue ea subaequilongo. Ovarium brevissime stipitatum lanuginosum. Legumen ovoideum, ca. 4 mm longum et 2 mm altum, ventre carinatum dorso rotundatum, hirsutum, semibiloculare. Semina 1—2.

Holotypus: Iran, Fars: Nurabad, Doshman-Ziary region, Ab-Zalou village, Kuh-e Tasak, 1900—2500 m, 31.5. 1983, V. Mozaffarian 45827 (TARI; Iso: Hb. Podl.).

*Astragalus facetus* Maassoumi & Podl., sp. nov. e Sect. *Hemiphaca* Bge.

Differt ab *A. multicaulis* Ledeb. stipulis pilosis nec margine tantum ciliatis, foliolis utrinque pilosis, leguminibus pilosis.

Plantae perennes pilis basifixis brevissimis appressis albis in inflorescentiis insuper nigris immixtis dense obtectae. Caules nonnulli debiles elongati ad 25 cm alti internodiis foliis subaequilongis. Stipulae 3—4 mm longae, anguste triangulares acutae vel obtusiusculae



Fig. 2. *Astragalus doshman-ziariensis*, habit. -a. Standard. -b. Wing-petals. -c. Keel.

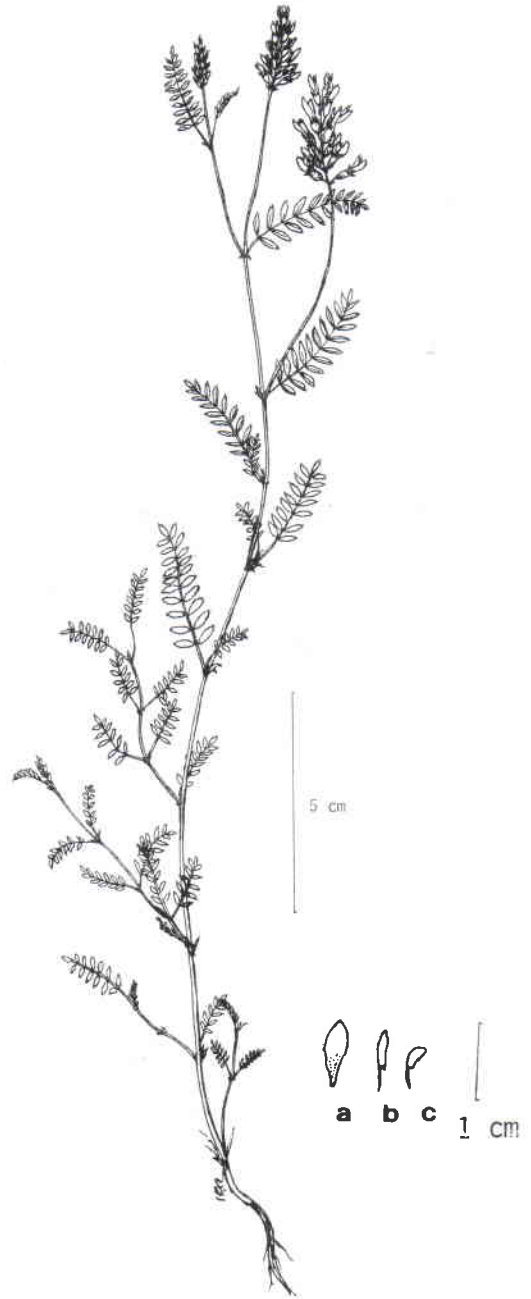


Fig. 3. *Astragalus facetus*, habit. -a. Standard. -b. Wing-petal. -c. Keel.

extus pilosae, petiolo basi vix adnatae in facie opposito caulis ad medium inter se connatae. Folia 1.5 — 3 cm longa, petiolo brevissime suffulta sicut rachis dense piloso. Foliola 7 — 10 juga, anguste elliptica apice rotundata, 2 — 5 mm longa et 0.7 — 2 mm lata, utrinque dense pilosa. Inflorescentiae in axillis foliorum superiorum, pedunculo gracile 2 — 5 cm longo piloso suffultae; flores numerosi in racemam primo densiusculo deinde laxiuscule longesti. Bractee membranaceae 1 — 1.5 mm longae, anguste ovatae, pilosae. Flores brevissime pedicellati. Calyx 3 — 4 mm longus breviter tubulosus, appresse albinigripilosus, dentibus subulatis 1 — 1.5 mm longis. Corolla albida violacei - suffusa, glabra. Vexillum 7 — 9 mm longum; lamina elliptica 3 — 3.5 mm lata, apice rotundata, basi cuneatim angustata. Alae 6 — 8 mm longae; lamina anguste oblonga, apice rotundata, ca. 4 mm longa et 1 mm lata, basi breviter auriculata. Carina 5 — 6 mm longa; lamina oblique oblongo - curvata 3 mm longa, breviter auriculata. Ovarium sessile, pilosum. Legumen sessile anguste ovatum basi cuneato - rotundatum apice acuminatum, ca. 7 mm longum, 3 mm altum et latum, semibiloculare, valvis tenuibus, appresse pilosis.

Holotypus: Iran, Esfahan, Borujen,

Wastegan, 2280 m, 28.7.1973, leg. M. Riazi 10233 (TARI; Iso: Hb. Podl.).

*Astragalus ghahremanii* Maassoumi & Podl., sp. nov. e Sect. *Malacothrix* Bunge

Differt ab *A. laristanicus* Bornm. & Gauba caulibus brevibus, stipulis duplo brevioribus, foliolis multo minoribus, bracteis 3 — 4 mm tantum (nec 10 — 12 mm) longis.

Plantae perennes, breviter caulescens vel acaules, pilis albis rigidis ± dense obtectae. Caudex multiceps. Caules ad 4 cm longi, dense appresse pilosi. Stipulae virides 3 — 6 mm longae anguste triangulares, pilosae, inter se liberae, petiolo breviter adnatae. Folia 4 — 8 cm longa, petiolo lamina brevior vel ea aequilongo, sicut rachis dense pilis ad 1.5 mm longis appressis vel partim semipatentibus obtecta. Foliola 6 — 8 juga, elliptica, 2 — 6 mm longa et 1.5 — 4 mm lata apice rotundata, supra marginem versus tantum subtus undique dense subappresse pilosa. Inflorescentiae axillares, pedunculo 6 — 9 cm longo sicut rachis piloso suffultae; racema multiflora primo dense deinde laxa vel laxissime ad 10 cm elongata. Bractee viridiusculae 3 — 4 mm longae, anguste lineares acuminatae, pilosae. Flores sessiles. Calyx 12 — 13 mm longus, breviter tubulosus, dense longe patenter

villosus, dentibus viridibus lineari-subulatis tubo  $\pm$  aequilongis. Corolla in vivo lilacina, glabra. Vexillum 15 — 16 mm longum; lamina elliptica, 7 — 9 mm lata, apice rotundata vel leviter emarginata, basi cuneatim angustata. Alae 14 — 15 mm longae; lamina anguste oblonga apicem versus leviter dilatata, rotundata, basi auricula ca. 1 mm longa provisa, ungue ea fere aequilongo. Carina 11 — 12 mm longa; lamina oblique elliptica leviter curvata, apice acutiuscula, brevissime auriculata, ungue ea sublongiore. Ovarium sessile, pilosum, stylo glabro. Legumen (immaturum) subsessile, ellipticum, ca. 10 mm longum, longe villosum.

Holotypus: Iran, Baluchestan: Saravan to Dehak, 13.3.1974, leg. Iranshahr & Ershad 16344 — E (EVIN; Iso. W)

Other specimens seen: Baluchestan, 91 miles SE of Khash on road to Saravan, 4000 ft., 17.3.1971, Grey - Wilson & Hewer 190 (W).

The species is described in honour of Dr. A. Ghahreman, University of Tehran.

*Astragalus inexpectatus* Maassoumi & Podl., sp. nov. e Sect. *Dasyphyllium* Bunge

Differt ab *A. lanatus* Labill. foliolis 10 — 18 jugis (nec 8 — 12 jugis) duplo longioribus, indumento in inflorescentiis pilis albis et insuper nigris (nec mere e pilis nigris) consistente.

Plantae perennes, dense pilis basifixi albis vel in inflorescentia pilis nigris immixtis oblecta. Caudex caudiculos nonnullus elongata emittens. Caulis abbreviatus ad 2 cm longus. Stipulae 5 — 7 mm longae, albidae vel leviter viridiusculae, late vel anguste triangulares, petiolo basi breviter adnatae, caulem vaginantes et breviter inter se connatae, inferiores margine ciliatae superiores breviter pilosae. Folia 5 — 8 cm longa, petiolo breve 1 — 2 cm longo sicut rachis dense pilis brevissimis patentibus proviso. Foliola pilis primo contigua deinde parce remota, 10 — 18 juga elliptica, 6 — 12 mm longa et 3 — 6 mm lata utrinque brevissime patenter hirsuta, saepissime complicata. Inflorescentiae singulares, pedunculo 5 — 6 cm longo dense breviter piloso obsitae, floribus numerosis in capitula densa vel subdensa congesta. Bracteae ca. 4 mm longae, lineares, membranaceae, albi-nigrihirsutae. Pedicelli 2 — 3 mm longi pilosi. Calyx ca. 10 mm longus, tubulosus breviter hirsutus, dentibus subulatis ca. 3 mm longis. Corolla glabra in sicco violascens. Vexil-



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



lum ca. 16 mm longum; lamina rhomboidea, ca. 8 mm lata, apice leviter emarginata, basi cuneatim angustata. Alae ca. 15 mm longae; lamina anguste oblonga, apice rotundata, ca. 8 mm longa et ca. 1 mm lata, basi auricula ca. 1 mm longa provisa, ungue 7 mm longo. Carina 12 mm longa; lamina oblique anguste oblonga, apice acutiuscula, 6 mm longa et 3 mm lata, brevissime auriculata, ungue ea aequilongo. Ovarium sessile, pilosum. Legumen sessile oblique elliptica, basi rotundata apice in rostro ca. 3 mm longo acuminatum, 15 mm longum, 7 mm altum et 6 mm latum, ventre distincte carinatum dorso profunde sulcatum, semibiloculare, valvis tenuibus dense lanatis.

Holotypus: Iran, Esfahan, Boin, Tangdoozan, Kuh-e Blashtad, 2700 — 2900 m, 20. 7.1981, Nowroozi & Etemadi 1287 (TARI, Iso. Hb. Podl).

*Astragalus iranshahrii* Maassoumi & Podl., sp. nov., e sect. *Caprini* Bunge

Differt ab *A. darlingtonii* Podl. cuius obformam petalorum similis foliolis 19 — 22 juga angustis pedicellis longioribus, floribus distincte brevioribus, petalis in sicco intense purpureis.

Perennis, acaulis, 8 — 17 cm alta. Stipulae

10 — 11 mm longae, lanceolatae, margine ciliatae, basi breviter petiole adnatae. Folia 8 — 17 cm longa, breviter petiolata, petiolo 1 — 4 cm longo, sicut rachis dense patenter hirsuta. Foliola 19 — 22 juga, lineari - lanceolata vel anguste elliptica 6 — 14 mm longa et 2 — 5 mm lata, supra glabra, subtus laxiusculus hirsutus, margine purpurascens et longe ciliata, saepissime complicata. Inflorescentiae subradicales 3 — 4 florum, pedunculo nullo vel ad 20 mm longo, hirsuto. Bractee 8 — 10 mm longae, lineares, hirsutae. Pedicelli 8 — 10 mm longi, dense pilosi, interdum bracteolis linearibus minutis provisi. Calyx 12 mm longus, pilosus; dentibus linearibus, 3 — 4 mm longis. Corolla purpurea, vel dense violacea (in sicco). Vexillum 23 — 26 mm longum; lamina oblonga, in parte media 10 mm lata, apice leviter emarginata, basi in ungue ea contracta. Alae 20 — 22 mm longae; lamina oblonga, apice oblique acuta, basi auriculata, auricula 2 — 3 mm longa; ungue lamina paulo longiore. Carina 20 mm longa; lamina oblique curvato-triangularis, apice obtusiuscula, basi breviter auriculata, ungue lamina paulo longiore. Ovarium pilosum, basi ca. 3 mm longe stipitatum, stylo sub stigmatate glabro. Legumen pilosum stipite 1.5 — 2 mm longo - suffultum, 22 — 25 mm longum et 10 — 13



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

mm latum, ventro applanatum vel leviter carinatum, dorso rotundatum, incomplete biloculare.

Holotypus: Chaharmahal-e Bakhtiari: Shahr-e Kord, Shalomzar, Agha-Sabz, 2400 m, 28.5.1986, Mozaffarian 54608 (TARI; Iso. Herb. Podlech).

Other specimens seen: Bakhtiari: Tang-e sayad, restricted region, Pirkuh, prope Zardiha, Gafarokh, 32 km, Shahr kord, 3.6.1974, Iranshahr (TARI); Borojen, Ganduman Kuh-e Bar aftar, 2300 m, 31.5.1986, Mozaffarian 54771 (TARI).

The species is named in the honour of Mr. Dr. M. Iranshahr

*Astragalus memnonius*\* Maassoumi & Podl., sp. nov. e sect. *Malacothrix*

Differt ab *A. mollis* Bieb. foliolis emarginatis breviter subappresse pilosis et inflorescentia singulare terminale.

Plantae perennes, 20—22 cm altae breviter albi- et partim albi - nigripilosae. Caudex parce ramosus. Caules foliati 4—6 cm longi, internodiis brevibus, densissime pilis appressis albis obtecti. Stipulae 3—5 mm longae firme membranaceae, albi - nigripilosae, vaginates et inter se breviter connatae, petiolo basi ad 1 mm adnatae. Folia 4—8 cm longa, petiolo

1—1.5 cm longo sicut rachis pilis brevissimis albis et partim nigris immixtis patentibus obtecto. Foliola 10—15 juga, oblonga vel obovata vel fere obcordata, 4—8 mm longa et 2—4 mm lata apice distincte vel leviter emarginata, supra laxe subtus densiuscule breviter appresse puberula. Inflorescentia singularis terminalis, pedunculo 6—8 cm longo, pilis subappressis albis apicem versus nigris immixtis obtecto, multiflora; racema densiuscula 3—8 cm longa. Bractae virides, lineares, 6—10 mm longae, pilosae. Flores subsessiles. Calyx 14—16 mm longus, leviter inflato-tubulosus, pilis patentibus longis albis et brevibus nigris obtectus; dentibus subulatis ca. 4 mm longis. Corolla in sicco viridiusculo - lilacina. Vexillum ca. 23 mm longum, lamina rhomboideo - elliptica, apice leviter emarginata, basi cuneatim in unguem contracta. Alae ca. 19 mm longae; lamina anguste oblonga, apice rotundata basi auricula fere orbiculare 1—1.5 mm longa provisa, ungue ea fere sesquilingiore. Carina ca. 17 mm longa; lamina leviter curvato - oblonga, apice obtusiuscula, basi breviter auriculata, ungue ea sesquilingiore. Ovarium ca. 1 mm longe stipitatum, pilosum.

\* *memnonius* = coming from the orient.



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

Holotypus: Iran, Prov. Hamadan: Neiridj near Avadje, 1600 m, 13.5.1974, leg. Dini & Bazargan 8572 (TARI).

Sect. *Plagiophaca* Maassoumi & Podl., sect. nova.

Sect. *Dasyphyllium* Bunge similis sed differt leguminibus unilocularibus basi valde oblique gibbosis dorso leviter carinatis nec profunde sulcatis. Species unica:

Typus: *A. plagiophacos* Maassoumi & Podl.

*Astragalus plagiophacos* Maassoumi & Podl., spec. nov.

Plantae perennes pilis brevibus basifixis obsitae. Caudex multiceps, caudiculos partim elongatos emittens. Caules abbreviati vel subnulli subappresse sicut rachis dense pilis albis crispule patentibus obsito. Foliola contigua, 9 — 11 juga, anguste elliptica vel anguste obovata, 3 — 7 mm longa et 1 — 3 mm lata, utrinque dense subappresse ad subpatenter pilosa, saepissime complicate. Inflorescentiae solitariae, pedunculo 2 — 5 cm longo, patenter albi vel apicem versus nigripiloso suffultae, floribus numerosis in capitulum rotundum vel breviter ovoideum dense congestis. Bractaeae 3 — 4 mm longae, ovatae, acuminatae, albi - nigri - hirsutae.

Flores sessiles. Calyx ca. 9 mm longus, tubulosus, crispule albi - nigripilosus, dentibus subulatis, ca. 3 mm longis. Corolla glabra in vivo alba viridi - tincta in sicco violacea vel interdum viridi - tincta. Vexillum 14 — 15 mm latum; lamina rhomboidea, ca. 6 mm lata, apice leviter emarginata basi cuneatum angustata. Alae 12 — 13 mm longae; lamina anguste oblonga, 5 — 6 mm longa et ca. 2 mm lata, apice rotundata, basi auricula rotundata ca. 1 mm longa provisa, ungue ca. 7 mm longo. Carina ca. 11 mm longa; lamina oblique elliptica, margine inferiore valde curvata, margine superiore fere recta apice acutiuscula, ca. 5 mm longa ungue ea subaequilongo. Ovarium sessile, pilosum. Legumen sessile valde oblique triangulari-ovata, unilatera-liter gibbosum, linea ventrali fere recta vel leviter curvata, linea dorsali oblique valde curvata, apice acuminatum, latera-liter sub - compressum, 11 — 13 mm longum, 7 — 8 mm altum et ca. 5 mm latum, valvis tenuibus dense lanatis, unilocularis, oilgospermum.

Holotypus: Iran, Semnan, ca. 20 km NW of Shahrud, above Nekarman, Kuh-e Shahvar, 3700 — 3950 m, 1.8.1982, leg. Assadi & Mozaffarian 40861 (TARI; Iso. Hb. Podl.).

Other specimens seen: Mazanderan, Kuh-

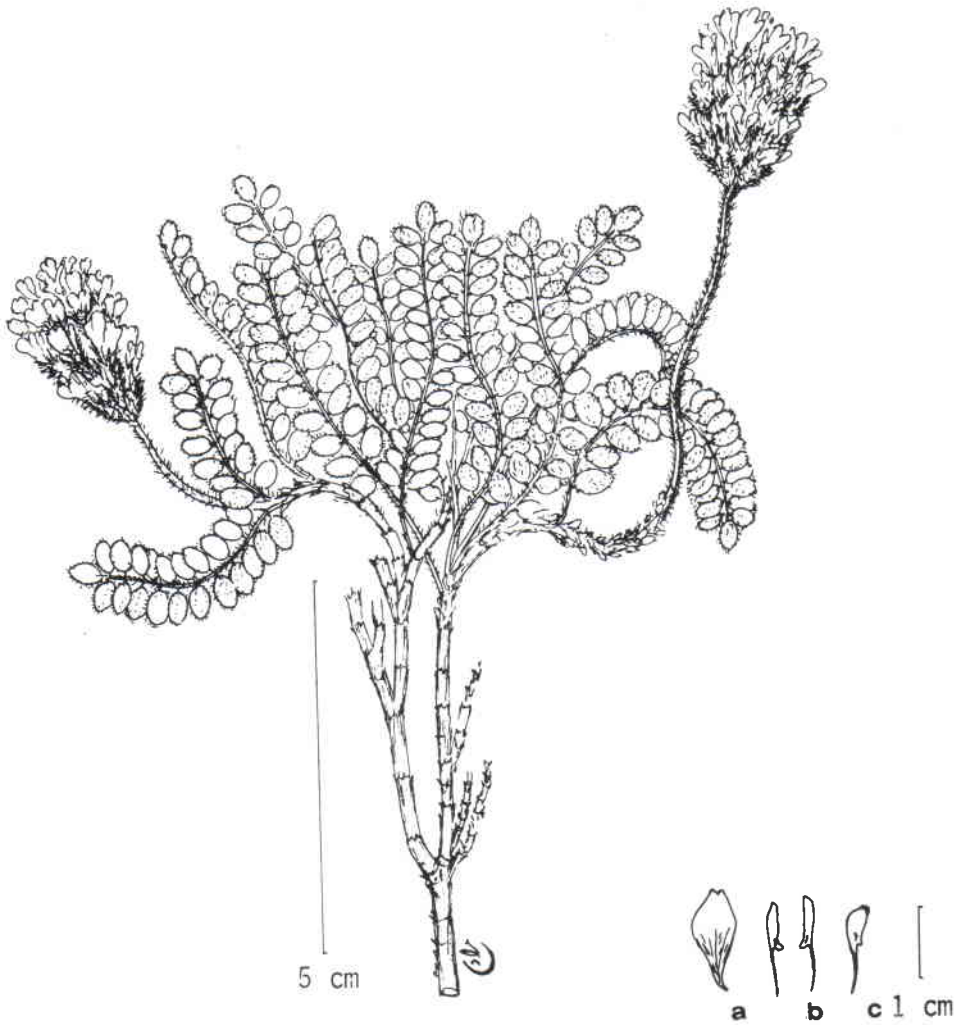


Fig. 7. *Astragalus plagiophacos*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

ikakashan, 10,000 ft., 18.7.1940, W. Koelz 16414 (US); Mazanderan, Nezva Kuh, Western top, 3300 m, 8.7.1959, Wendelbo 1282 (W); Semnan, ca 20 km NW. of Shahrud, above Nekarman, Kuh-e Shahvar, 3600 — 3900 m, 2.8.1982 Assadi & Mozaffarian 40908b

*Astragalus rubrocalycinus* Maassoumi & Podl., sp. nov. e sect. *Caprinii*

Differt ab *A. aegobromus* Boiss. & Hohen. stipulis a petiolo fere liberis, calyce nebroso suffuso, stylo sub stigmate indistincte appresse piloso vel glabro, leguminibus multo majoribus latioribusque, ab *A. ovinus* Boiss. stipulis a petiolo fere liberis, calyce nebroso suffuso, stylo sub stigmate appresse piloso raro glabro leguminibus latioribus.

Plantae ad 50 cm altae, acaulis vel caulescens, caule ad 10 cm longo, ovario excepto omnino glaber. Stipulae 20 — 30 mm longae, albi-membranaceae, longitudinaliter striatae demum rubescentes, basi per 2 mm petiolo adnatae vel fere liberae. Folia 20 — 40 cm longa; petiolo sulcato crasso, 6 — 13 cm longo et ad 3 mm crasso; foliola 9 — 10 juga, late ovata, 20 — 30 mm longa et 15 — 22 mm lata, apice rotundata vel mucronulata, basi subtruncata vel leviter cordata,

Inflorescentiae subradicales vel axillares, 6 — 8 florum pedunculo 3 — 6 cm longo. Bractae lanceolatae, 13 — 17 mm longae, viridiusculae demum rubrescens, pedicelli 6 — 7 mm longi, erecti vel deflexi. Calyx late tubulosus basi oblique gibbosus, viridiusculus, demum rubrescens, 18 — 20 mm longus, dentibus subulatis vel linearibus, ca. 1/3 longitudibus, tubi aequantibus. Corolla flava, glabra. Vexillum ca. 30 mm longum; lamina obovata 14 — 16 mm lata, apice profunde incisa, basi sensime angulata. Alae 25 — 27 mm longae; lamina oblonga, apicem versus leviter dilatata, antice rotundata, basi auriculata, auricula ca. 2 mm longa; ungue laminam aequante. Carina 22 mm longa; lamina oblique triangulari-elliptica, apice rotundata, basi leviter auriculata, ungue lamina paulo longiore. Ovarium ca. 1 mm longe stipitatum, pilosum. Stylo sub stigmate linea indistincte pilosa provisa vel raro glabro. Legumen sessile, longe sericeo pilosum, 20 — 30 mm longum, 11 mm altum et 9 — 10 mm latum, apice rostratum, rostro 3 — 4 mm longo ventre distincte carinatum, dorso late applanato-sulcatum, incomplete biloculare.

Holotypus: Azarbayejan: 43 km from Mianeh to Khalkhal, 1950 m. 20.6.1986, Maassoumi & Abouhamzeh 56879 (TARI, Iso: Herb. Podlech).

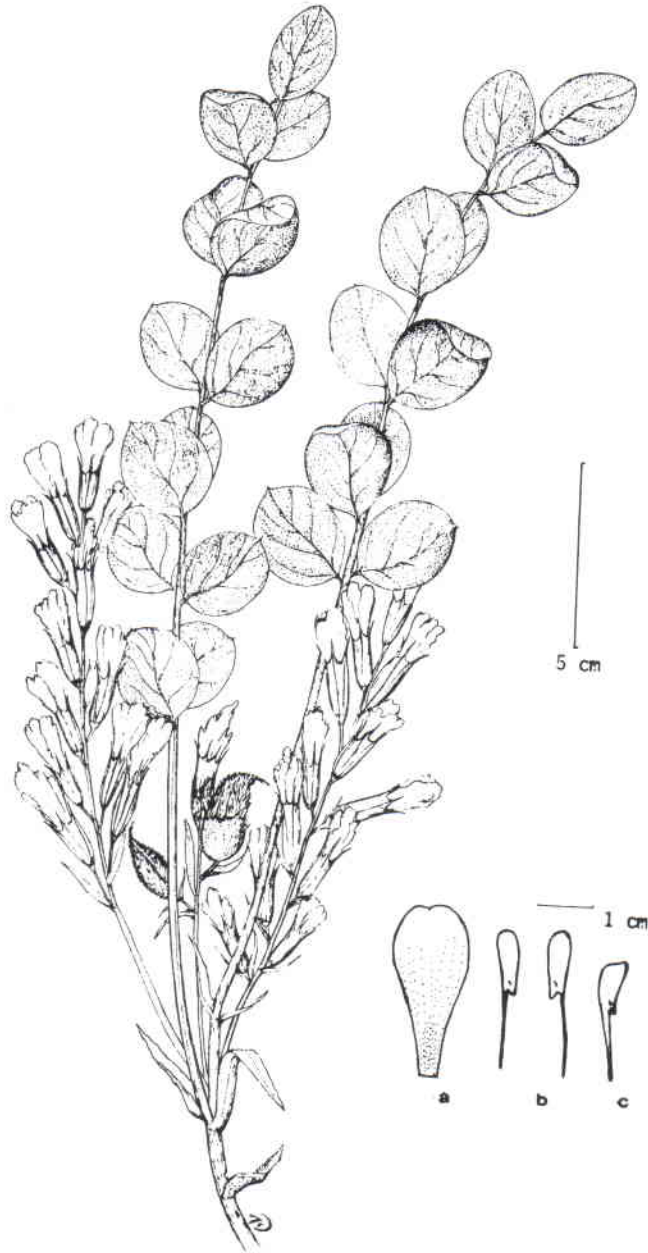


Fig. 8. *Astragalus rubrocalycinus*, habit. —a. Standard. —b. Wing-petals. —c. Keel.



Other specimens seen: Azarbayejan: 18 km from Khalkhal to Hashjin (Goloujeh village) 1850 m, 20.6.1986, Maassoumi & Abouhamzeh 56901, 56899, 56902 (TARI & Herb. Podl.); Khalkhal, Sanjabad region, between Sangabad and Piraghag village, 1550 m, 22.6.1986, Maassoumi & Abouhamzeh 56936, 56935; 97 km on the road from Tabriz to Mianeh, 1600 m, 29.6.1986. Maassoumi & Abouhamzeh 57054; on the road from Zanjan to Mianeh (15 km before Mianeh), 1100 m, 19.6.1986, Maassoumi & Abouhamzeh 56853.

*Astragalus termeanus* Maassoumi & Podl., sp. nov. e sect. *Malacothrix* Bunge

Differt ab *A. laristanicus* Bornm. & Gauba caulibus brevioribus, indumento rachidis pedunculique distincte et e pilis appressis brevibus et patentibus distincte longioribus consistente, pilis in inflorescentis stipulisque partim nigris, leguminibus longioribus ab *A. ghahremanii* stipulis longioribus, foliis breviter petiolatis, foliolis 8—12 jugis (nec 6—8 jugis), longioribus, indumento rachidis e pilis appressis brevibus et patentibus longioribus (nec fere aequilongis) consistente, floribus brevioribus, fere sessilibus.

Plantae perennes, breviter caulescentes, grisei - puberulae. Caudex multiceps. Caules 2—6 cm longi, densissime appresse pilosi inde albidi. Stipulae membranaceae vel viridiusculae, 4—5 mm longae, triangulari - acuminatae inter se liberae, petiolo per 1—3 mm adnatae, laxe pilis albis nonnulli nigris immixtis obtectae. Folia 4—10 cm longa, petiolo 1—3 cm longo, lamina multo brevior, sicut rachis dense pilis appressis 0.5—0.8 (—1) mm longis et insuper laxe pilis longioribus 1—2 mm longis patentibus obsito. Foliola 8—12 juga, anguste elliptica, 4—11 mm longa et 1.5—3 mm lata, apice acutiuscula, supra glabra vel laxe hirsuta, subtus dense longe et rigide subpatenter hirsuta, interdum complicata. Inflorescentiae axillares, pedunculo 3—10 cm longo sicut rachis piloso sed apicem versus pilis nigris immixtis suffultae; racema multiflora primo laxiuscula deinde multo elongata ad 12 cm longa. Bractae membranaceae, 6—10 mm longae, subulatae, albi - nigripilosae. Pedicelli 1.5—2.5 mm longi subpatenter hirsuti. Calyx 13—15 mm longus breviter tubulosus, sat dense patenter hirsutus, dentibus obscure viridibus anguste linearibus vel subulatis 6—8 mm longis tubo aequilongis vel paulo longioribus. Corolla lilacina, glabra. Vexillum 16—21 mm longum; lamina anguste

elliptica vel elliptica, 5 – 9 mm lata, apice rotundata, basi in unguem brevem cuneatim angustata. Alae 15 – 19 mm longae; lamina anguste oblonga, apice rotundata, basi auricula breve provisa, ungue ea aequilongo. Carina 13 – 14 mm longa; lamina fere triangulari - elliptica, apice acutiuscula, breviter auriculata, ungue ea sesquilingiore. Ovarium brevissime stipitatum, villosum. Legumen sessile anguste ellipticum 10 – 12 mm longum, 4.5 – 5 mm altum et ca. 4 mm latum, ventre obtuse carinatum, dorso anguste sulcatum, apice breviter rostratum, fere complete biloculare, dense longissime lanatum.

Holotypus: Iran, Baluchestan: 150 km S of Zahedan on road to Khash, 1500 m, 24.4.1983, leg. Termeh, Moussavi & Tehrani 41110–E (EVIN; Iso. W).

Other specimens seen: Baluchestan: Saravan, Mahouk, 9.4.1950, Salavatian 5599 – E (W, EVIN); E of Khash, 28.3.1973, Soják 2125 (PR); 40 km W Saravan near Suran, 30.3.1973, Soják 688 (PR); 31 km SW of Espakeh, 10.4.1973, Soják 1680 (PR); 5 – 10 km N of Khash, 1300 m, 25.4.1983, Termeh, Moussavi & Tehrani 41113 – E (EVIN, W); 18 km S. of Khash on the road to Iranshahr, 1320 m, 28.4.1983, Termeh, Moussavi & Tehrani 41093 – E (EVIN, W).

*Astragalus vessalae* Maassoumi & Podl., sp. nov. e sect. *Malacothrix* Bge.

Differt ab *A. eriopodus* Boiss. tota planta validiore, caule ad 5 mm crasso, foliolis latioribus breviter pilosis, pedunculis validis, foliis distincte brevioribus, lamina vexilli apice fere bilobato - incisa.

Planta perennis, ca. 30 cm altus, pilosus. Caulis erectus, ca. 25 cm altus, validus, ca. 5 mm crassus, angulato - sulcatus, sat dense pilis albis brevibus 0.2 – 1 mm longis obtectus, internodiis nonnullis ad 6 cm longis. Stipulae firme virides ovati - triangulares 10 – 12 mm longae, margine ciliatae vel apicem versus pilosae, inter se liberae, basi petiolo per 2 – 3 mm adnatae. Folia 12 – 16 cm longa, petiolo 2 – 5 cm longo una cum rachide striato, sicut caulis piloso. Foliola 7 – 9 juga, elliptica vel obovata, 10 – 16 mm longa et 7 – 12 mm lata, apice rotundata vel laviter emarginata, supra glabra vel laxe subpatenter pilosa, subtus laxe vel interdum densiuscule subappresse pilosa. Inflorescentiae axillares, pedunculo valido ad 10 cm longo, sicut caulis piloso sed pilis nonnullis nigris immixtis suffultae, multiflorae, racema densa deinde elongata. Bractae membranaceae, lineares, ca. 5 mm longae, pilosae. Flores sessiles. Calyx ca. 12 mm longus, tubulosus, dense pilis

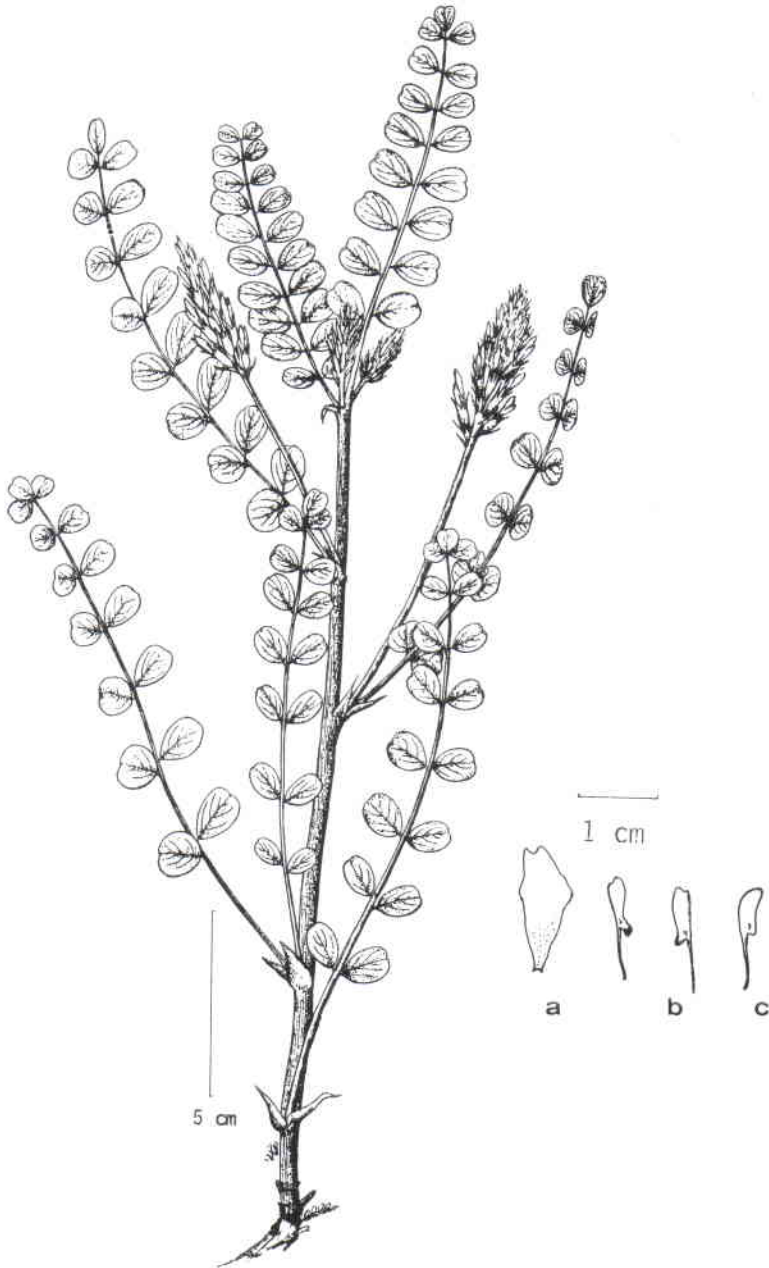


Fig. 9. *Astragalus vessalae*, habit. —a. Standard. —b. Wing-petals. —c. Keel.

ad 1.5 mm longis patentibus obtectus, dentibus subulatis ca. 4 mm longis. Corolla in sicco dilute lilacina. Vexillum ca. 17 mm longum, anguste rhomboideum 7 mm latum, apice distincte emarginatum fere bilobatum, basi late cuneatim angustatum. Alae ca. 15 mm longae; lamina oblonga apice emarginata, basi auricula orbiculare ca. 1 mm longe suffulta. Ungue ea fere duplo longiore. Carina ca. 14 mm longa; lamina leviter oblongo - curvata apice rotundata, basi breviter auriculata ungue ea sesquilon-giore. Ovarium ca. 1 mm longe stipitatum, pilosum.

Holotypus; Iran, Theran: 71 km S of Ghazvin, near Nowdehak, 1250 m, 9.5.1972, leg. Moussavi & Amin 15370 (TARI)

The species is named in honour of Madame R. Vessal, phytochemist in Pharmaceutical Research Centre (P.R.C).

#### Acknowledgments

Thanks due to Mr. E. Moradi and Mr. Y. Rezai the artists of the Research Institute of Forests and Rangelands for drawing the illustrations.