کارگاه های آموزشی مرکز اطلاعات علمی چهار دانشگاهی

کارگاه آتلاین پروپوزال بروزوال نویسی و یادگیری نویسی

کارگاه آتلاین روش تحقیق و وصال نویسی علوم انسانی

کارگاه آتلاین آشنایی با باکیفیه های اطلاعات علمی بین المللی و تاریخچه جستجو
NEW SPECIES OF SCROPHULARIA L. (SCROPHULARIACEAE) FROM IRAN

F. Attar, M. R. Joharchi, M. Nowrouzi & A. Hatami


Scrophularia L. has 60 species in Iran that 26 taxa are endemic to Iran. Among the collected specimens six new species are recognized as new species that named S. alhagioides, S. crassipedunculata, S. ispahanica, S. khorassanica, S. schiraziana and S. tortuosissima. These species are compared with their closest related taxa. Also S. rosulata is reported for the first time from Iran. The illustrations of all species are presented.

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INTRODUCTION

Scrophularia L. is the largest genus of Scrophulariaceae in Iran that has 60 species in Iran (Grau, 1982; Attar & Hamzeh’ee, in press; Attar, 2006). Most species of the genus Scrophularia in Iran are Irano-Turanian elements and are distributed in mountainous regions. During the studies on the genus Scrophularia in Iran for the preparation of the Flora of Iran we found some interesting specimens that further studies showed to be new species or new to Iran. These species are introduced in this paper.

NEW SPECIES

Scrophularia alhagioides Attar & Joharchi, sp. nov. (Fig.1).

Type. Iran: Khorassan: northwest of Bojnurd, between Ayer-ghaye and Soukhli, ca. 1000m, 12.6.2001, Joharchi 33747 (holotypus -FUMH).

Species S. variegata subsp. variegata similis sed pedunculi et pedicelli spinosi (nec inermes); corolla 3 mm longa (nec 4-7.5 mm longa); bractae infimae usque 13 mm longae (nec usque 6 mm longae).

Perennial, deep green, multi-stemmed, ca 47 cm tall. Stem terete, striate, branched, pruinose. Leaves opposite, pruinose; basals irregularly deeply parted, with up to 20 mm long petiole; lamina up to 2 cm long and 1 cm wide, lanceolate; stem leaves sessile, smaller. Inflorescence bracteate, thyrs; cymes alternate; lower cymes up to 5-flowered; uppers 1-2-flowered. Peduncle...
Fig. 1. *Scrophularia alhagioides* (x 0.5); corolla (x2); flower (x3).
spinos, 5-7 mm long, pruinose. Pedicel spinose, 1-2 mm long, pruinose. Lower bracts linear, 13 mm long and 1 mm wide, upper 1.5 mm long and 0.2 mm wide, linear, lax pruinose. Calyx segments almost orbicular, 1.5 mm long and 2 mm wide, lax pruinose; margin white, 0.5 mm wide, lacerate. Corolla 3 mm long, reddish; lips unequal. Staminode linear, free, inserted in the middle of length of corolla. Filaments 3 mm long, covered by white glands; anthers pale. Capsule 2-3x2-3 mm, spherical, glabrous, apiculate.

**Affinities.** *Scrophularia alhagioides* is closely related to *S. variegata* M. B. subsp. *variegata* and *S. czapendaghi* B. Fedtsch. (distributed in Turkmenistan). It is very characteristic by its especial habit that is very similar to *Alhagi* that is very rare among species of *Scrophularia* at least in SW of Asia.

**Habit.** Sandy slopes, very rare.

*Scrophularia crassipedunculata* Attar & Joharchi, sp. nova (Fig. 2).

**Type.** Iran: Khorassan: Mashhad, Cheshmeh Sabz, 31.10.1985, Ayatollahi & Joharchi. 13630- (Holotype FUMH).

**Differt ab** *Scrophularia variegata* M. B. subsp. *variegata* pedunculi crassi, stricti; cymae infimae 1-2 florae (nec usque ad 8 florae); stamina non exserta, 6 mm longa (nec 7 mm longa); lobis superioribus 2 mm longis (nec usque ad 1 mm longis).

Suffruticose, all glabrous, up to 30 cm long. Stems numerous, almost simple, striate. Leaves opposite, sessile, subamplexicaule, ovate-cordate, acute, obtuse or sometimes apiculate; lower leaves dentate to entire at margin; middle and upper leaves entire. Inflorescence bracteate, few-flowered; cymes alternate; lower cymes 3-flowered, upper 1-flowered. Peduncle up to 10mm long, covered by stipitate black glands. Pedicel up to 6 mm long, covered by stipitate black glands. Bracts 3x1 mm, linear or lanceolate, glabrous. Calyx 3.5x3 mm, suborbicular, glabrous, membranous at the margin. Corolla 7mm long, yellow or greenish, with unequal lips. Staminode flabellate, covered by white glands, greenish-yellow. Stamens 4.5 mm long, included; anthers yellow; filaments glabrous. Capsule not seen.

*Scrophularia khorassanica* Attar & Joharchi, sp. nov. (Fig. 4).

**Type.** Khorassan: Mashhad, southwest of Sarakhs, between division of Salehabad and Baghbaghu, south of Rahmatabad, 690-700m, 2.6.2003, Joharchi & Zangooei. 34573- (holotype FUMH).

**Differt ab** *Scrophularia rosulata* Stieffelh. Cymae infimae usque 5-florae (nec (7-) 25 florae); pedunculi usque 1 cm longi (nec usque 3.3 cm longi); staminodium nullum (nec lineare); antherae rubrae (nec albae).

Perennial or biennial, totally pruinose, up to 40 cm tall. Stem indistinctly striate, simple or branched. Basal
Fig. 2. Scrophularia crassipedunculata (x 0.5); details (x2).
Fig. 3. Scrophularia ispahanica (x 0.7); details (x 3.5).
Fig. 4. Scrophularia khorassanica (x 0.65); details (x 3.2).
leaves in rosette, with up to 2 cm long petiole; lamina elliptic, irregularly dentate or parted; lower leaves opposite, shortly petiolate similar to basals; median leaves alternate, reduced, sessile. Inflorescence bracteate; cymes alternate; lower cymes up to 5-flowered, with up to 1 cm long peduncle; upper cymes 1-flowered, with 3 mm long peduncle; pedicel 1-2 mm long or absent. Bracts in lower cymes lanceolate, leaf-like, 8-12x5 mm; bracteoles linear, 2x0.5 mm. Calyx segments pruinose, 4x3 mm, oblong to elliptic, broadly flat white-margined. Corolla 4 mm long, pink, lips subequal. Stamens exerted, 5 mm long; anthers red; filaments glandular. Staminode absent. Capsule glabrous, 3 mm long and 4 mm wide, apiculate. Seeds 3x2 mm, black, prismatic, slightly curved, deeply transversely scrobiculate.

Other specimen. Paratype: Iran: Khorassan: Mozduran, 14 km to Sarakhs, 850 m, 21.5.1985, Ayatollahi & Joharchi 13215-FUMH.

Scrophularia schiraziana Attar & Hatami, sp. nov. (Fig. 5).
Type. Fars: Shiraz, Deh Bid, Qasr-e Yaghoub, 2040 m, Hatami 105853 (Holotype Shiraz, Research Centre of Agricultural and Natural Resources Herbarium).

Perennis, ad 32 cm alta, e rhizomate. Caules singuli, erecti, quadrangulare. Folia 10-50x5-30 mm, opposita, ovata, indivisa, dentata, acuta, cordata vel subcordata, petiolo 5-15 mm longo suffulta. Inflorescentia thydroidea, bracteolata. Cymae inferiorae alternatae. Pedunculi usque 15 mm longi. Pedicelli usque 5 mm longi. Bracteae inferiorae foliaceae, usque 8x3 mm, lanceolatae, triangulares. Calyx laciniae 3x2 mm, suborbiculares vel ellipticae, albo-marginatae. Corolla 5 mm longa, tubo pallidi, lobis rufescence. Stamina 5 mm longa. Staminodium suborbiculare. Capsula glabra, 5x4 mm, apiculata. Semina immatura.

Perennial herb, rhizomatous, all hirsute-glandulose, 32 cm. tall. Stem solitary, erect, quadrangular. Leaves 10-50x5-30 mm, opposite, broadly ovate, undivided, dentate or double-dentate at margin, acute, cordate or subcordate at base, with up to 5-15 mm long petiole. Inflorescence thyse, bracteate. Lower cymes alternate, with up to 15 mm long peduncle, in upper cyme 5 mm long; pedicel up to 5 mm long. Bracts in lower cyme leaf-like, up to 8x3 mm lanceolate-triangulare. Bracteoles in upper cymes smaller, linear. Calyx segments subequal, 3x2 mm, suborbiculare to elliptic, with flat white margin. Corolla 5 mm long; tube pallid; lips rufescence. Stamina included, 4 mm long. Staminodium semi-orbicular. Capsule glabrous, 5x4 mm, apiculata. Seeds immaturity.

Paratype. Fars: Sepidan, 2200 m, 15.5.1972, Zandi 6678; Kermanshah, Paveh, Hajij, Zeltah valley, 650-700 m, Tavakoli 3083 TARI.

Habit. Riverside.

The relationships of S. schiraziana is not clear, but it probably belongs to the group S. cattarifolia based on their undivided leaves and S. variegata. based on length and color of corolla.

Scrophularia tortuosissima Attar & Joharchi, sp. nov. (Fig. 6)
Type. Iran: Khorassan. Mashhad, road of Sarakhs, between division of Beznagan and Shurlogh, 650 m, 16.8.1994, (holotype Akhani & Zangooei 24521-FUMH).

Differt ab Scrophularia frigida subsp. haussknechti ramis tortuosissimis (nec divaricatis), cyma infima usque 1-2 florae (nec usque 9 florae), pedunculo usque 5.5 mm longo (nec usque 30 mm longo), corolla 8.5 mm longa, (nec 3.5-5 mm longa), stamina bis ± 10 mm longis (nec ± 5 mm longis), staminodis linearibus (nec spathulatis, reniformibus vel triangularibus).

Perennial, up to 60 cm tall, glabrous. Stem hardly dichotomously branched, intricate, terete, striate. Leaves opposite, few, remote, basals spathulate, parted, up to 13 mm long and 3 mm wide, with 2 mm long petiole; cauline leaves similar to basals but smaller. Inflorescence bracteate, thyse; lower cymes 1-2-flowered, upper cymes 1-flowered. Peduncle in lower cymes 5.5 mm long, in upper cymes up to 3 mm long; pedicel up to 6 mm long, with long dense white spreading glandular hairs. Bracteoles linear, binate, covered by dense long hairs. Stamina bis ± 10 mm long, ± 5 mm long, ± 10 mm long, covered in fruit, linear, 6x1 mm, indistinctly membranose-margined, covered by dense long multicellular hairs, glands with brown tip. Corolla 8.5 mm long, pink, slightly constricted at base, lips subequal or upper lip slightly longer, all lobes with rounded tip. Staminodium reduced into linear appendage, indistinctly broad at tip, free. Stamens more or less 10 mm long, exerted; dried anthers brownish; filaments glandular. Capsule subspherical, apiculate, 4x4 mm, yellow, covered by glandular hairs, sometimes mixed with shortly stipitate glands, with persistent 8 mm long style. Seeds light or dark brown. elliptic to subovate, curved, indistinctly pustulate.
Fig. 5. Scrophularia schiraziana (x0.86); fruit (x7).
Fig. 6. *Scrophularia tortuosissima* (x 0.6); flower (x6); corolla (x3).
NEW REPORT
Scrophularia rosulata is reported for the first time from
eastern and eastern parts of Iran. It is distributed in
Afghanistan (Harat) and Turkmenistan (Ashkhabad)
near borders of Iran. This species is easily
distinguished by pruinose-canescent habit, large rosette
leaves and long petiole.

Specimens seen. Khorassan: Shirvan, North Bajgiran,
Baba Haselmeh, 1600m, 15.7.1992, Faghihnia &
Zangooei 22244-FUMH; Mashhad, Southwest of
Sarakhs, between division of Salehabad and
Baghbaghu, South of Rahmatabad, ca. 700 m, 2.6.2003,
Joharchi & Zangooei 34573; northwest of Bojnurd,
between Atabai & Guinik, 1150 m, 22.4.2001, Joharchi
& Zangooei 33456-FUMH; Northeast of Bojnurd,
between Surak and Ghezelghan, 1.7.1986, Joharchi &
Zangooei 13669-FUMH; Northeast of Bojnurd, Gifan,
1400 m, 16.6.1981, Joharchi & Zangooei, 20778-
FUMH; northeast of Bojnurd, Gifan, 1400 m,
16.6.1991, Joharchi & Zangooei 20772-FUMH;

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REFERENCES
Attar F. & Hamzeh’ee, B. (in press): Two new species
of Scrophularia L. (Scrophulariaceae) from Iran.-
Feddes Repertorium.
Grau, J, 1981: Scrophularia in Flora Iranica (Ed. K. H.
Rechinger), no. 147: 213-290. - Akademische
Druck-u. Verlagsanstalt Graz-Austria.
Lall, S. S. & R. R., Mill, 1978: Scrophularia in Flora of
Turkey and the East Aegean Islands (Ed. P. H.
Davis, vol. 6: 603-647. -Edinburgh, at the University
Press.
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