TWO NEW PLANT SPECIES FROM KURDISTAN PROVINCE, WEST OF IRAN

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Among the plant materials collected from Kurdistan province, two new species including Ornithogalum sanandajense (Liliaceae) and Satureja avromanica (Lamiaceae), were recognized. They are described here and their taxonomic characters, differences with their relatives and illustrations are given.

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Key words. Ornithogalum sanandajense, Liliaceae, Satureja  avromanica, Lamiaceae, new species, Taxonomy, Kurdistan, Iran.

Introduction
During the collection and study on plant specimens in Kurdistan herbarium, two interesting plants were found. They are determined as new species. Ornithogalum sanandajense belong to Liliaceae. It is an affinity of O. narbonense and O. brachystachys. The other new species namely Satureja avromanica belong to Lamiaceae seems to be closest relative of S. macrosiphonia and S. edmondi. In this paper new species are described and compared with their relatives.

New species

Ornithogalum sanandajense Maroofi, sp. nov. (Fig 1).

Bulbi 1.6-3 cm diam., ovoidei. Scapus racemo inclusu 20-36 cm longo, 1.5-3.5 mm lato. Folia 2-8, usque ad 20 cm longa, 1.5-9 mm lata, margine laevia vel ciliata. Racemus cylindraceus vel cylindraceo-ovoideus, 4-11 cm longus. Flores 10-38. Bracteae lanceolato-acuminatae, 7.5-13 mm longae, dorso plerumque nervis viridibus. Pedicelli floriferi 1-4 (-7) mm longi, ascendentes. Tepala usque ad 14 mm longa, 2 mm lata, lineari-oblonga, obtusa, alba, extus pallide brunnea vel alba, dorso brunnea, brunneo-viridia vel in sicco nervis viridibus. Stamina 6-8 mm longa, unequilibria; antherae flavae, 2.5-4 mm longae, filamenta subulate acuminata, 5.5 mm longa. Capsula ovoidea, rugosa, usque ad 7 mm longa. Semina usque ad 3 mm longa, nigra, rugulosa.

Typus. Kurdistan: Km 28 from Saqqez to Baneh, Piromaran village, Nacarouz mountain, 2500 m. 10.06.2003, Maroofi & Sh. Naseri, 6137 (holotypus Kurdistan herbarium; isotypus TARI).

Perennial. Bulb ovoid 1.6-3 cm. in diameter. Scape including the raceme 20-36 cm. long and 1.5-3.5 mm. broad. Leaves 2-8 in number, 5-9 mm. broad, up to 20 cm. long, usually withered and folded in flowering time, at the margins smooth or ciliate. Inflorescence cylindrical to cylindrical-ovate raceme, 4-11 cm. long, with 10-38 flowers. Bracts 7.5-13 mm. long; lower lanceolate, long acuminate; the narrowed upper part of bracts equal or longer than its broader lower part; upper bracts much broader and smaller than lowers, usually with greenish bands. Pedicels in flowering state 1-4(-7) mm. not more elongated in fruiting state, but thickened, ascending. Tepals up to 14 mm. long and 2 mm. broad, linear to oblong, apex rather convolved, obtuse, white inside, bright brownish to white with brownish to brown-greenish or green nerves dorsally in dry state. Stamens 6-8 mm. long, unequal, slightly more than...
New Ornithogalum and Satureja from Iran

half length of perianth; anthers yellow, 2.5-4 mm.; filament subulate acuminate, 5.5 mm. long. Capsules rather ovoid, rugose on the surface, up to 7 mm. long. Seeds up to 3 mm long, black, rugose.  

Other specimens studied. Kurdistan: Sanandaj to Saral area, elevation of Gahvareh village, 2000 m. 01.06.2007, Maroofi 8139; Km 16 Sanandaj to Maryvan, new road, 1800-1900 m., 25.05.2002, Maroofi & M. Naseri 5326; South West of Sanandaj, Dolab village, Avalan mountain, 2570 m. 9.06.1997, Kaffash & Karegar 4727 (imperfect specimen). Lorestan: Dorud, Oshtrankouh prope Saravand, 1900 m. 06.05.1973, M. Riazi, 9696!  

Rechinger (1995) cited the specimen Riazi 9696 in Flora Iranica under Ornithogalum brachystachys C. Koch. This specimen was studied in the herbarium of TARI. The characters of this specimen differ from O. brachystachys by having shorter pedicel, long bracts and not green fascia on the back of tepals. Further studies showed that this specimen belongs to the new species Ornithogalum sanandajense.

Table 1: Comparison of Ornithogalum sanandajense and its relatives.

<table>
<thead>
<tr>
<th>Species</th>
<th>Characters</th>
<th>O. sanandajense</th>
<th>O. narbonense</th>
<th>O. brachystachys</th>
<th>O. kurdicum</th>
<th>O. arcuatum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulb diameter</td>
<td>1.6 -3 cm</td>
<td>1.5 -3 cm</td>
<td>c. 3 cm</td>
<td>2.5 -4 cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scape size including racemes</td>
<td>20-36 cm</td>
<td>20-36 cm</td>
<td>17-45 cm</td>
<td>50-80 cm</td>
<td>35-120 cm</td>
<td></td>
</tr>
<tr>
<td>Leaf number</td>
<td>2-8</td>
<td>4 -6 (-7)</td>
<td>3-8 mm</td>
<td>2 (-5.5) cm</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>Leaf breadth</td>
<td>1.5 -9 mm</td>
<td>7-16 mm</td>
<td>3-8 mm</td>
<td>2 (-5.5) cm</td>
<td>4-18 mm</td>
<td></td>
</tr>
<tr>
<td>Raceme size</td>
<td>4-11 cm</td>
<td>12-30 cm</td>
<td>10-15 cm</td>
<td>20-70 cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flower number</td>
<td>10-38</td>
<td>25-75</td>
<td>10-25</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bract size and shape</td>
<td>9-13 mm, much longer than the pedicels, lanceolate</td>
<td>10-15 mm, triangular - subulate</td>
<td>20-30 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicel size and direction in anthesis</td>
<td>1-4 (-7) mm, ascending</td>
<td>± 10 mm, subhorizontal, slightly erect to patent</td>
<td>1-2 ascending cm</td>
<td>15-30 mm, patent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tepal size and shape</td>
<td>up to 14 mm, linear-oblong</td>
<td>9-11 mm, oblanceolate</td>
<td>10-12 mm, elliptic-ovate (Flora Iranica)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorsal nerves color of tepals in dried state</td>
<td>brownish to brown-greenish or rarely green</td>
<td>broad or narrow green</td>
<td>pale brown or apparently green (Flora Iranica)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capsule size and shape</td>
<td>7×4.5 mm, ovate</td>
<td>12-14 mm, ovate, to ovate-cylindrical or oblong</td>
<td>10-12 mm, elliptic</td>
<td>8-10-6-8 mm, broad ovate-ellipsoid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ornithogalum sanandajense belongs to the subgen. Beryllis (Salish.) Baker. It is related to several species, and its closest relatives are O. kurdicum Bornm., O. arcuatum Stew., O. narbonense L. and O. brachystachys C. Koch. It differs from O. kurdicum Bornm. by the following characters: Scape size 20-36 cm. (not 50-80 cm.), breadth of leaves 1.5-9 mm. (not 20-55 mm.), pedicel 1-4 (-7) mm. (not 10-15 mm.). It differs from O. brachystachys C. Koch. by the following characters: Number of leaves 2-8 (not 3-6), raceme 4-11 cm. long (not 10-15 cm.), bract 9-13 mm., much longer than the pedicel (not shorter than the pedicel), color of tepal dorsal nerves in dried state are usually brown, brown-greenish or rarely green (not always green), capsule up to 7 mm. (not 10-12 mm.). The new species is compared with all of its relatives by 11 characters in table 1. The characters have partly been taken in Cullen (1985), Komarov (1935), Rechinger (1995), Zahariadi (1980).

Etymology: The epithet alludes to Sanandaj city, center of Kurdistan province.
Fig. 1. *Ornithogalum sanandajense* (×1); flower and capsule (×2).
Satureja avromanica Maroofi, sp. nov. (Fig. 2).

Affinis ab Satureja macrosiphonia Bornm., sed differt caulibus 35-80 cm longis (nec c.30 cm), simplicibus vel parce ramosis (nec virgatis), foliis longis, cuneato-oblongis vel cuneato-obovoidatis usque lanceolatis (nec parvis, oblongo-linearibus), glandulis flavo-aaurantiacis (nec purpureis), verticillastis omnino 3 vel rarius 1-2 floribus (nec uni-vel subunifloribus), calyce 3.5-6.5 mm longo (nec 4 mm), corolla (10-)18-25 (27) mm longa (nec 20-22 mm longa). Affinis ab Satureja edmondi Briquet, sed differt caulibus 35-80 cm. longis (nec 15-40 cm.), foliis ad 35-6 mm. (nec usque ad 15.5 mm.), verticillastris 3 rarius 1-2 floribus (nec 4-6 floribus), calyce pubescenti (nec glabro), corolla tubo calyci usque ad 4-6-polo longiore (nec duplo).


Suffruticose perennial. 35-80 cm. high, many stemmed, slender, nonaromatic, mostly simple or with a few branches, with woody stock and short brachyblasts in leaf-axils, ± angled but not tetragonar, ascending-arcuate to erect, grayish green above, creamy at the middle and brown below, with dense or rather lax papilla and sometimes sparse stipitate glands above, glabrous to sparsely papillose below. Leaves opposite or in fascicles, entire, lax, sessile or subsessile, in lower part with petiole up to 1 mm. long, cuneate-oblong to cuneate-obovoid or lanceolate, up to 35 mm. long and up to 6 mm. broad, oblanceolate; upper leaves smaller than the lowers, grayish-green, dotted with hyaline yellowish-orange sessile glands and covered by lax or dense papilla, sometimes glabrescent in mature and on lower leaves surfaces, obtuse to subacute, flattened, revolute to involute at the margin; main nerve distinctly prominent. Inflorescence terminal, in lax cymes, main inflorescence longer than the laterals on branches; verticillasters mainly with 3 or rarely 1-2 flowers; pedicels 1-4 mm. long, shorter than the calyx; bracts c.1 mm. long, oblong-ovate, folded lengthwise; bracteoles 2, smaller than the bracts, nearly the same shape. Calyx pubescent, dark purple in the beginning, paler to green later, 3.5-6.5 mm. long, tubular, 2-labiate, sometimes covered with papilla and sessile or stipitate glands on the outside, more or less glabrous inside, 10 veined; teeth of the calyx shortly hairy at the margin; lower lip teeth 1.7-2 mm., upper c.1 mm. long, subulate-triangular. Corolla pubescent, slender, violet to purplish-lilac, paler below the tube to white, 10-(18-25)-27 mm. long, straight, covered with papilla and sparse yellowish sessile glands, decrease below; inner surface of the middle and lower lobes usually with fasiculate violet hairs; other lobes with sparse whitish papilla; inner surface of corolla tube in lower part of stamens pilose; upper lobes slightly shorter than the lowers; tube without ring of hairs. Stamens 4, included in the tube; the anterior pair longer; upper filaments 1.5 and lower filaments 1.8-2.5 mm. long. Anthers sagittate, purplish-violet, 0.5 mm. long. Style shorter than the stamens in the beginning, developed later and exerted from the tube; style branches equal or subequal. Nutlets 4, minutely glandular-hairy above, with obverse-rounded apex, bright to deep brown, ± smooth, 2<0.9 mm. long, oblong to broadly ovate, with 4-5 nerves in posterior.


Etymology. The epithet alludes to the locality of collected specimen Avroman area in South-West of Kurdistan province.

References
Fig. 2. *Satureja avromanica* (× 0.76); inflorescence (×3); Calyx (x 3.4); corolla (x 2.4).