A NEW VARIETY AND A REVIEW OF THE GENUS NEOTORULARIA (BRASSICACEAE) IN FLORA OF IRAN

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A short review of the genus Neotorularia is presented. Altogether, three species including N. torulosa, N. contortuplicata and N. dentata are known from Iran. Neotorularia dentata var. grandiflora is described as a new variety to the science. The specimens of the new variety have been collected from NE. of Iran (Khorassan province). The new variety differs from the type variety mainly by the size of flower organs. Key to the taxa and illustration of the new variety is given.

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Key words. Neotorularia, Brassicaceae, review, new variety, Iran.

INTRODUCTION

The first author has been preparing Sisymbrieae part of Brassicaceae Flora of Iran (Assadi 1989). She has studied herbarium specimens of TARI, FUMH and local provincial herbaria of Iran. In addition, she has made several excursions to different parts of Iran, collecting herbarium specimens and doing field observations. Hedge and Lamond (Leonard 1986) were introduced the genus Neotorularia Hedge & Lamond in Leonard to include the species of Torularia (Cosson) O. Schultz (Brassicaceae) as this genus antedated by Torularia Bonnemaison an algal genus. The genus Neotorularia has About 11 species in Mediterranean region to C and SW Asia, one species extending to N Africa (Hedge 1965; Hedge 1968; Jeffrey 1973). According to Flora Iranica four species occur in Iran (Hedge 1968), but one of them namely N. aculeolata (Boiss.) Hedge & Lamond based on phylogenetic studies should belong to the genus Sisymbrium (Warwick et al. 2002) as S. aculeolatum Boiss.

The aim of this paper is to present a short revision of the genus Neotorularia in Iran and to describe a new variety of the genus.

RESULTS AND DISCUSSION

The following characters may circumscribe the genus Neotorularia in Iran. Annual plants, branched from the base, covered with simple and or branched hairs. Leaves entire, sinuate or lobed at the margin, narrowed at base to a petiole. Racemes ebracteate. Pedicels short, often thickened and appressed to stem. Sepals erect, not saccate at the base. Petals mainly white, longer than sepals; median glands absent. Fruits a siliqua,
dehiscence, often variously curved; stigma bilobed.

Seeds uniseriate, wingless; cotyledons incumbent.

Key to the species of *Neotorularia* in Iran

1. Pedicels and siliqua appressed to stem, only upper part recurved
   - Pedicels and siliqua not appressed to stem 2

2. Pedicels very short or to 1 mm long. Petals 2.5-4.5 mm long
   - Pedicels 1-8 mm long. Petals 5 mm long


    Syn.: *Sisymbrium torulosum* Desf., Fl. Atlant. 2; 84 (1798-1800); *Torularia torulosa* (Desf.) O. E. Schulz in Engler, Pflanzenr. 86 (IV, 105): 214 (1924).

    Specimens seen.
    - Fars: Shiraz to Kazeroon, 800 m, Maassoumi & Abouhamzeh 51841.
    - Booshehr: 86 km from Genaveh to Dogonbadan, 350 m, Runemark & Mozaffarian 27311.
    - Khuzestan: 58 km from Behbahan to Ramhormoz, 260 m, Runemark & Mozaffarian.
    - Kerman: Zarand, Dehzyar, 2100 m, Khodashenas 3026, 2831, 2817, 3033Y, Fath Abad, 1560 m, Khodashenas 97; Kahnuj, Mehruieh, 640 m, Saber 5830, 5827.
    - Khorassan: 35 km south of Sabzevar, 950 m, Saber 5830, 5827.
    - Semnan: south of Shahrood, 1420 m, Wendelbo & Assadi 29590.
    - Tehran: 43 km from Tehran to Ghom, 1120 m, Wendelbo & Assadi 3026, 2831, 2817, 3033Y, Fath Abad, 1560 m, Khodashenas 97; Kahnuj, Mehruieh, 640 m, Saber 5830, 5827.


    Specimens seen.
    - Gorgan: 35 km from Tehran to Ghom, 1120 m, Wendelbo & Assadi 19025; Karaj, Shahdasht, 1175 m, Forughian 5915.


    1. Sepals 2.2-2.5 mm long. Petals 4-5 mm long and 2 mm wide
       - Sepals 2.7-3 mm long, Petals 6.5-7.5 mm long and 2.7-3.7 mm wide
       var. *grandiflora* 

       **var. dentata**

       *Specimens seen.* Gorgan: 69 km from Azadshahr (Shahpasand) to Shahrood, 1000 m, Wendelbo & Assadi 29590.

       *Khorassan.* NE. of Torbate Jam, East of Saleh Abad, Between Saleh Abad & Garmab-e Olia, 546 m, Khodashenas & Joharchi 34501b; Torbate Jam to Taybad, 1050 m, Faghihnia and Zangooei 18219, 18214 (FUMH); Sout of Torbat-e Heydariyeh, Khey Abad, 900 m, Joharchi and Zangooei 19883 (FUMH); Robat Sefid, 1700-2000 m, Runemark & Sardabi 3608, 3595; Road of Masahh to Sarakhs, 800-900 m, Assadi & Mozaffarian 23329; 14 Km Mazdavand to Sarakhs, 850 m, Ayatollahi & Joharchi 13204 (FUMH) & Joharchi and Zangooei 13897 (FUMH).

       **var. grandiflora** Khodashenas & Joharchi, var. nov. - Fig. 1.

       Differ ab *N. dentata* var. *dentata* sepalis 2.7 - 3 mm longis (nec 2.2-2.5 mm), petalis 6.5-7.5 x 2.7-3.7 mm (nec 4-5 x 2 mm), filamentis magnis 3.8-4 mm longis (nec 3 mm), filamentis parvis 3.3–3.5 mm longis (nec 2.3 mm).

       Annual herbs, 20-30 cm tall, erect, branched, ± covered with short, branched hairs. Lower leaves, obovate-oblong, stalked, 40-60 mm long, 6-15 mm broad, sinuate-dentate to subentire; upper leaves oblong-linear, 10-45 mm long, 2-5 mm broad, subdentate to entire, attenuate at base. Racemes 20-40-flowered, ebracteate. Flowers c. 10-15 mm across, white or tinged pale pink. Pedicels 3-5 mm long in fruit, thickened, erect, appressed to the axis. Sepals 2.8-3 mm long. Petals 6-8 mm long, 3.3-3.5 mm broad. Long stamens 3.8-4 mm and short stamens 3.3–3.5 mm long; anthers 0.7-1 mm long. Siliqua 15-30 mm long, l (-1.5) mm broad, erect or often curved or irregularly coiled above, torulose, scabrous with short branched hairs; style c. 1 mm long; stigma bilobed; septic membrane; seeds 5-8 in each locule, c. 1.5-2 mm long, ellipsoid, yellow-brown.

   **Typus.** Iran, Khorassan: NE. of Torbat-e Jam, east of Salehabad, between Salehabad and Garmab-e Olia, 546 m, Joharchi & Memariani 42008 (holotypus FUMH; isotypus TARI). - *Paratypus.* 35 km Torbat-e Jam to Taybad, 1050 m, Faghihnia and Zangooei 14314 (FUMH). Sarakhs, after Mazdavand (Mozduran), Pistachio forests, Ayatollahi & Zangooei 14004.
Fig. 1. Neotorularia dentata var. grandiflora (×0.7); flower (×2.8); stamens (×3.5); opened calyx (×10); petal (×4.2); fruit (×2.2).
(FUMH). NE. of Mashhad, between Chahchahe and Kuhe Khoaje, 604 m., Joharchi 43474(FUMH).

Notes. This plant might approach \textit{N. korolkowii} (Regel & Schmalh.) Hedge & Lamond which is found in Afghanistan and Turkmenistan, but the most reliable distinguishing feature is the trichomes on the leaves and fruit. In \textit{N. korolkowii} they are exclusively Y-shaped, whereas in \textit{N. dentata} they are well branched, also pedicels in \textit{N. korolkowii} are narrower than fruits.

\textit{Neotorularia dentata} is distributed in Afghanistan, Iran, Pakistan, Tajikistan, and Turkmenistan. It grows in North and North east of Iran (Gilan and Khorassan provinces), at an altitude 800-2000m above sea level. In border of NE and E Khorassan some plants are found among the \textit{N. dentata} population, which differ from the typical \textit{N. dentata} by having obviously larger and many flowers, with several stem leaves. These specimens are described as a new variety.

REFERENCES