

ATRAPHAXIS BINALUDENSIS (POLYGONACEAE), A NEW SPECIES FROM NORTHEASTERN IRAN

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Atraphaxis binaludensis (Polygonaceae) is described as a new species from northeastern Iran. This species is morphologically similar to *A. intricata* but differs from it in having spiny whitish branches, petiolate obovate-rhomboid leaves, and large flowers. Taxonomic characters and illustration of the new species as well as a key to species from NE Iran are presented.

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Key words: Polygonaceae; *Atraphaxis*; new species; Iran

گونه جدیدی از جنس *Atraphaxis* (تیره علف هفت بند) از شمال شرق ایران
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ولی اله مظفریان، دانشیار پژوهش موسسه تحقیقات جنگلها و مراتع کشور.

گونه *Atraphaxis binaludensis* به عنوان گونه‌ای جدید از استان خراسان در شمال شرق ایران نامگذاری و معرفی می‌گردد. گونه جدید از لحاظ ریخت شناسی به گونه *A. intricata* نزدیک می‌باشد، اما در داشتن سرشاخه‌های سفید خارمانند، برگهای واژ تخم‌مرغی و دم‌برگ‌دار و اندازه گل بزرگتر از آن متمایز می‌گردد. صفات تاکسونومیک، تصویر گونه جدید و کلید شناسایی برای گونه‌های *Atraphaxis* در شمال شرق ایران ارائه می‌گردد.

INTRODUCTION

Atraphaxis L. at the current status possesses 36 species with xeromorphic shrubby or sub-shrubby characteristics distributed throughout Northern Africa, Eurasia and Central Asia as its main biodiversity center (Cullen 1967; Rechinger & Schiman-Czeika 1968; Pavlov 1936; Brandbyge 1993; Qaiser 2001; Bao & Grabovskaya-Borodina 2003; Shuster & al. 2011; Tavakkoli & al. 2013; Yurtseva & al. 2013). In the recent studies, *Atraphaxis* has been classified in tribe Polygoneae of subfamily Polygonoideae (Sanchez & al. 2011; Schuster & al. 2011). According to floral characters, *Atraphaxis* has been divided into two subgenera, *Euatraphaxis* Jaub. & Spach and *Tragopyrum* Jaub. & Spach (Pavlov 1936) or two sections, *Atraphaxis* and *Tragopyrum* (M.B.) Jaub. & Spach (Rechinger & Schiman-Czeika 1968). The Section *Atraphaxis* is distinguished by four tepals, six

stamens, two styles and compressed achenes, while Section *Tragopyrum* is characterized by five tepals, eight stamens, three styles and trigonous achenes.

During the investigation of the specimens belonging to *Atraphaxis* preserved at the herbarium of Research Institute of Forests and Rangelands (TARI), we found a questionable specimen collected from Khorassan province. After consulting regional floras and other relevant literatures (Rechinger & Schiman-Czeika 1968; Cullen 1967; Qaiser 2001; Pavlov 1970; Bao & Grabovskaya-Borodina 2003) as well as herbarium specimens, we concluded that the material actually is a new species of *Atraphaxis*. Considering previous findings together with this new species introduced herein, the number of *Atraphaxis* species increased to eight in Iran, four of which are endemics as follows: *A. aucheri* Jaub. & Spach, *A. suaedifolia* Jaub. & Spach, *A. intricata* Mozaff. and *A. radkanensis* Tavakkoli,

Table 1. Diagnostic morphological characters of *Atraphaxis binaludensis*, *A. pyrifolia*, *A. intricata*, *A. seravschanica* and *A. radkanensis*.

Characters	<i>A. binaludensis</i>	<i>A. intricata</i>	<i>A. seravschanica</i>	<i>A. pyrifolia</i>	<i>A. radkanensis</i>
Branches	spinescent	inermis	inermis	spinescent	inermis
Leaf size (mm)	5-6×4-5	2-5×1.5-4	10-20×5-10	15-25×10-13	7-15×4-7
Leaf shape	obovate-rhomboid	orbicular	ovate-lanceolate	spathulate-broadly obovate	oblong-ovate
Leaf apex	rounded-obtuse	obtuse	obtuse-acute	shortly acuminate	acute
Leaf margin	slightly revolute	slightly revolute	slightly revolute	entire or slightly crenate	slightly revolute
Petiole (mm)	0.5-1	0	1.5-2	3-5	2
Flower size (mm)	6-8×5-6	5×3-4	6-7×5-6	6-7×7-8	5-6×4-5
Pedicel length (mm)	2-3	2-3	8	2.5-4	1-3
Fruit length (mm)	2-4	2-3	3-4	± 3	2-3

Kaz. Osaloo & Mozaff. (Rechinger & Schiman-Czeika 1968; Akhani 1999; Mozaffarian 2006; Tavakkoli & al. 2013).

NEW SPECIES

Atraphaxis binaludensis S. Tavakkoli, Mozaff. & Kaz. Osaloo **sp. nov.** (Fig. 1)

Type: Iran. Khorassan province, Neishabour, Bojan village, Binalud Mountain, 1500-1700 m, 4 July 1984, V. Mozaffarian 49006 (Holotype: TARI).

Subshrubs ca. 50-70 cm high, much branched. Stem stout, tortuous, with grayish-brown bark, epidermis splitting longitudinally. Branches dense, flexuous, ± rigid, current year's branches ± straight, soon becoming lignified, grayish white, glabrous, leafless at the ends, pointed and spinescent, internodes 2-5 mm long. Leaves dark green, broadly obovate-rhomboid, rounded obtuse, slightly cuneate at base, 5-6×4-5 mm, glabrous on both surfaces, with abaxially prominent reticulate nerves, slightly revolute margin. Petiole short, 0.5-1 mm. Ochrea membranous, cylindrical, cleft in the upper part, into 2 or 3 lanceolate teeth, shorter than internodes, 1-2 mm long. Pedicel 2-3 mm. Flowers 1-3 in lateral fascicles on the current year branches, 6-8×5-6 mm. Perianth 5, light yellowish-red, turning brown, outer 2 smaller, reflexed in fruit, nearly ovate, the inner 3 larger, slightly unequal, broadly elliptic or orbicular-cordate, greatly exceeding the achene in both length and width. Stamens 8, filaments short, dilated at base. Ovary 3-angled. Style 3. Achenes dark brown, shiny, trigonous-ovoid, acuminate, smooth, 2-4 × 2-3 mm.

Atraphaxis binaludensis is morphologically close to *A. intricata* but differs from it in having spiny whitish branches; petiolate obovate-rhomboid leaves and larger fruits.

Distribution and ecology: *Atraphaxis binaludensis* seems to be restricted to Binalud Mountain (Neishabour, Khorassan province) in northeastern Iran. This species grows on calcareous-gypsum soil; other species

accompanying this new species are *Pimpinella tragi* Vill., *Bunium persicum* B. Fedtsch., *Leontodon asperrimus* (Willd.) Endl., *Acanthophyllum microcephalum* Boiss., *Astragalus sclerocladus* Bunge, *Crucianella gilanica* Trin., *Scorzonera* spp., *Jurinea* spp.

Phenology: Flowering and fruiting time: May to July.

Affinities: *Atraphaxis binaludensis* is morphologically close to *A. intricata*. Some of the diagnostic characters that are useful in distinguishing this species from the related species are presented in Table 1. These two species plus *A. seravschanica* Pavlov; *A. aucheri*; *A. suaedifolia*; *A. tournefortii* Jaub. & Spach; *A. intricata* and *A. radkanensis* belong to section *Tragopyrum* (Rechinger & Schiman-Czeika 1968; Akhani 1999; Mozaffarian 2006; Tavakkoli & al. 2013). *Atraphaxis seravschanica*, *A. intricata*, *A. radkanensis* and the new species are distributed in northeastern Iran. A diagnostic key to the species of *Atraphaxis* occurring in northeast of the country is presented. Referring to increasing of the new species discoveries in the genus *Atraphaxis* in the Iranian plateau, it seems that the plateau is one of the active speciation centers for this genus.

Etymology: The specific epithet refers to Binalud Mountain in Neishabour City, Khorassan Province, where the specimen was collected.

Key to the species of *Atraphaxis* (section *Tragopyrum*) distributed in northeastern Iran

1. Leaves and twigs puberulent; leaves acute
 1. *Atraphaxis radkanensis*
 - Leaves and twigs glabrous; leaves mostly obtuse 2
 2. Leaves more than 5 mm long, ovate-lanceolate
 2. *A. seravschanica*
 - Leaves at most 5 mm long, orbicular to obovate-rhomboid 3
 3. Branches inermis, leaf sessile 3. *A. intricata*
 - Branches spinescent, leaves shortly petiolate 4. *A. binaludensis*

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Fig. 1. *Atraphaxis binaludensis*: (A) Habit; (B1, B2, B3) inner perianth segments; (C1, C2) outer perianth segments; (D) flower; (E) Achene (Drawn from the holotype).