

## *Polygonum khajeh-jamali* (Polygonaceae), a new species from Iran

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*Polygonum khajeh-jamali* Khosravi & Poormahdi *sp. nova* (Polygonaceae) is described and illustrated from SW Iran. It can be assigned to *Spinescentia* group of sect. *Polygonum* and is characterized by its coriaceous leaves. The leaf epidermis contains a layer of tanniferous cells with thick walls absent in the other closely similar species.

Key words: Polygonaceae, *Polygonum*, new species, taxonomy

The genus *Polygonum* consists of about 230 species, which occur mainly in the northern temperate regions. In Iran, the genus is represented by 37 species including 10 endemics (Rechinger & Schiman-Czeika 1968, Mozaffarian 1988). As a part of investigations on the ultramafic flora of the Neyriz ophiolite, an unknown *Polygonum* was collected on serpentine soil near a chromite mine in Khajeh Jamali village. The material matches the description of the *Spinescentia* group in section *Polygonum*. Similar specimens had been seen by the authors in the herbaria of TARI and Shiraz University. Comparison with the materials in the herbaria of TARI, IRAN, TUH and Shiraz University, as well as reviewing the relevant literature (Rechinger & Schiman-Czeika 1968, Mozaffarian 1988) revealed that the new material represents a hitherto undescribed species.

***Polygonum khajeh-jamali* Khosravi & Poormahdi, *sp. nova* (Fig. 1)**

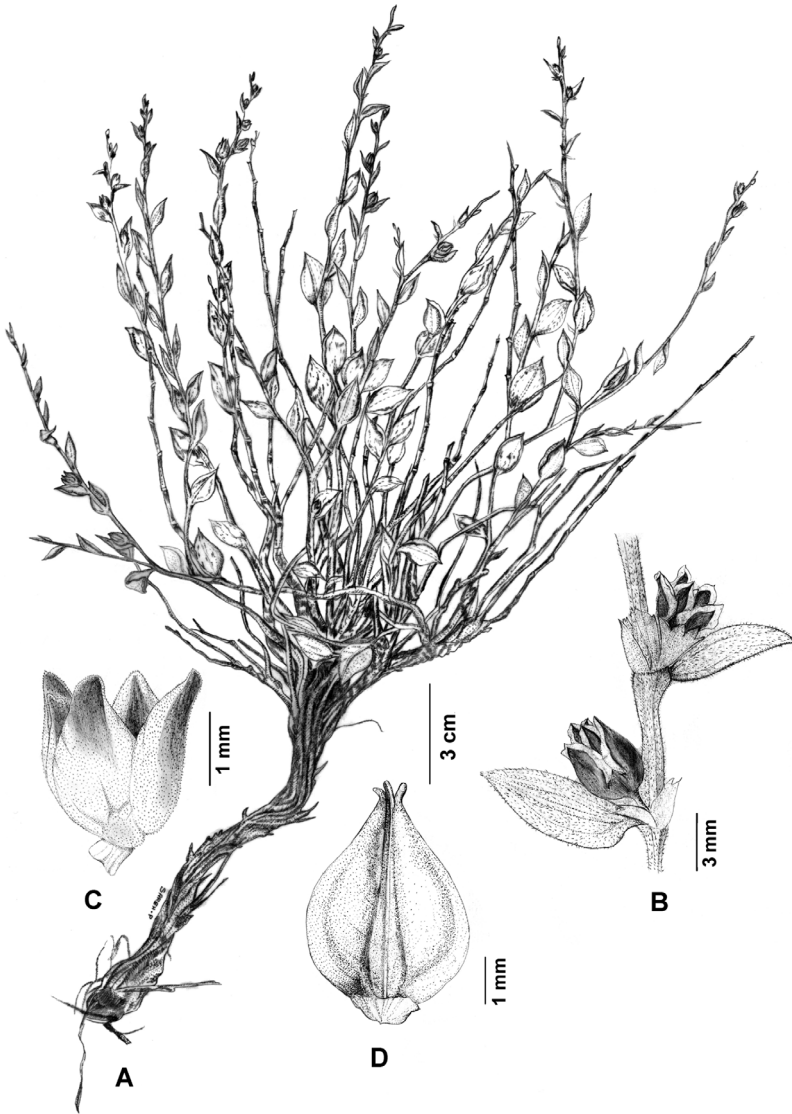
*Frutex erectus vel ascendens, 15–20 cm altus,*

*internodia 5–15 mm longa, tomentoso-puberula. Folia inferiora 5–15 × 2–9 mm, ovata usque lanceolata, acuminata vel cuspidata, cartilaginea, ad marginem revoluta, tomentoso-puberula. Ochreae caulinae 3–4 mm longae. Flores singuli, subsessiles. Perigonium 2–5 mm longum, extus papilloso-velutinum.*

HOLOTYPE: Iran. Fars province, Abadeh Tashk, Khajeh Jamali, chromite mine, 1998 m, 53°51'53.64"E, 29°48'46"N, 14.VI.2004 A. R. Khosravi, A. Mousavi & M. Soltani 23954 (Herbarium of Shiraz University).

ETYMOLOGY. The specific epithet refers to Khajeh Jamali village in Fars province, where the material was collected.

Perennial with a hard woody stock, up to 20 cm tall, with many stems arising from a branched base. Stems branched, hard, ascending-erect, tomentose-puberulent, internodes 5–15 mm long. Leaves coriaceous, sessile, revolute, tomentose-puberulent, acuminate to cuspidate, in lower part of stem ovate to lanceolate, 5–15 × 2–9 mm, in upper parts of stem lanceolate to linear, 3–10 × 1–3 mm. Leaf epidermis contains a layer of tan-



**Fig. 1.** *Polygonum khajeh-jamali* Khosravi & Poormahdi (from the holotype). — **A:** Habit. — **B:** Portion of inflorescence. — **C:** Flower. — **D:** Fruit.

niferous cells with thick walls. Ochreae 3–4 mm long, acute  $\pm$  tubular, lanceolate, setaceous-mucronate, lacerate or fimbriate, membranous, shorter than leaves. Flowers axillary, solitary 2–3 mm in diameter, sessile or subsessile, Ochreolae 2–3 mm long, lanceolate-ovate, lacerate, membranous, glabrous. Tepals 5, pink, 2–5  $\times$  1.5–2 mm, ovate, obtuse at tip. Stamens 8, filaments short, unequal, dilated at base, anthers basifixed. Ovary 1–1.5  $\times$  0.5–0.8 mm, oblanceolate, trigonous with three styles and capitate stigmas. Nuts trigonous, 4.5–5  $\times$  2.5–3.2 mm, brown, shining, glabrous. Flowering and fruiting from (April) May to June (July).

**DISTRIBUTION.** *Polygonum khajeh-jamali* seems to be restricted to east of Fars and west of Kerman provinces in SW Iran (Fig. 2) and it thus represents one of the narrow endemics of the Irano-Turanian region in Iran (Hedge & Wendelbo 1987).

**HABITAT ECOLOGY.** *Polygonum khajeh-jamali* grows on serpentine and non-serpentine soils in xeromorphic, very open dwarf-shrub lands dominated by *Ebenus stellata*, *Astragalus fasciculifolius* and *Convolvulus acanthocladus*. Other characteristic species accompanying this species are *Acanthophyllum gracile*, *Achillea eriophora*, *Amygdalus scoparia*, *Centaurea micro-*

*lonchoides*, *Ephedra pachyclada*, *Gymnocarpus decandar* and *Platychaete aucheri*.

**LEAF ANATOMY.** A histological study of leaves of *P. khajeh-jamali* and the assumed close allies, i.e. *P. dumosum* and *P. aridum*, was conducted using herbarium materials. Non-secretory trichomes are present in these species. The leaf epidermis in *P. khajeh-jamali* contains a layer of tanniferous cells with thick walls. Such cells are absent in *P. dumosum* and *P. aridum* (Fig. 3). The mesophyll in all species contains two layers of palisade parenchyma on the upper and lower sides of the leaf. Secretory elements were seen in enlarged crystalliferous cells restricted to the middle layer of the mesophyll. Such a pattern of crystalliferous cell distribution is rare in other dicot families, but common in *Polygonum* (Metcalfe & Chalk 1950, Mitchell 1971, Lersten & Curtis 1992).

**TAXONOMIC RELATIONSHIPS AND DISTINCTION.** The occurrence of erect and rigid flowering branches with hard and persistent branches after anthesis allows the inclusion of *P. khajeh-jamali* into the *Spinescentia* group of sect. *Polygonum* (sect. *Avicularia*). The group includes also *P.*

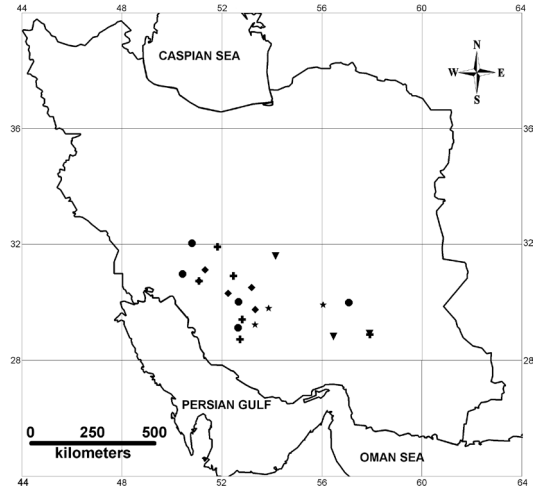


Fig. 2. Distribution of *Polygonum khajeh-jamali* (★), *P. salicornioides* (+), *P. dumosum* (●), *P. aridum* (◆) and *P. spinosum* (▼) in Iran.

*aridum*, *P. dumosum*, *P. salicornioides* and *P. spinosum*. These species are Irano-Turanian and common in the mountainous regions of the Iranian highlands (Fig. 2). The widest distributed species in the group are *P. salicornioides*, *P.*

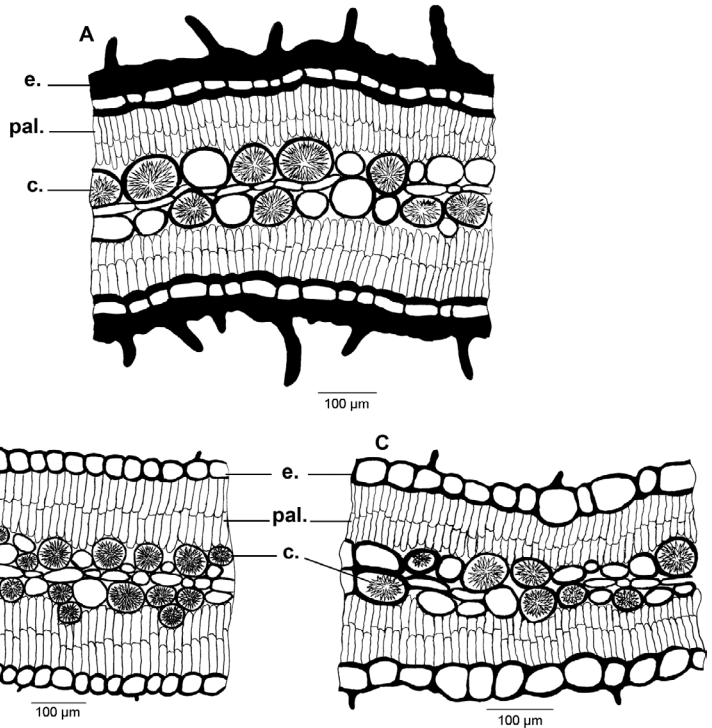


Fig. 3. Cross section of leaf in (A) *Polygonum khajeh-jamali*, (B) *P. aridum* and (C) *P. dumosum*. e = epidermal tanniferous parenchyma cell, pal. = palisade mesophyll, c = crystalliferous cell.

**Table 1.** Comparison of morphological and anatomical characteristics of *Polygonum khajeh-jamali* with those of closely related species.

	<i>P. khajeh-jamali</i>	<i>P. dumosum</i>	<i>P. aridum</i>	<i>P. salicornioides</i>	<i>P. spinosum</i>
Ochrea	acute ± tubular	acute ± tubular	acute ± tubular	truncate ± campanulate	truncate ± campanulate
Leaf duration	persistent	persistent	deciduous	deciduous	deciduous
Length of lower leaves (mm)	5–15	10–12	1–3(7)	4–10	4–10
Width of lower leaves (mm)	2–9	1–2	1–2	1–2	1–2
Shape of lower leaves	ovate to lanceolate	linear-elliptic	linear-lanceolate	oblonge-lanceolate	linear-lanceolate
Leaf texture	coriaceous	not coriaceous	not coriaceous	not coriaceous	not coriaceous
Thickness of tanniferous cells in epidermal layer	thick	thin	thin	thin	thin

*dumosum*, and *P. aridum*. *Polygonum khajeh-jamali* and *P. spinosum* are local endemics. In some remarkable morphological features, such as the persistent leaves, length of internodes and shape of ochrea, *P. khajeh-jamali* is most related to *P. dumosum* (Table 1). *Polygonum khajeh-jamali* differs from *P. dumosum* and the other species in the group mainly by having coriaceous (often ovate) leaves and thick tanniferous cells in the epidermal cell layer of leaves (Table 1).

ADDITIONAL SPECIMENS EXAMINED (paratypes). **Iran.** Prov. Fars, Abadeh-Tashk, Khajeh Jamali, chromite mine, 2000 m, 53°51'53.76"E, 29°48'38"N, 14.VI.2004 A. R. Khosravi, A. Mousavi & M. Soltani 23953 (Herb. Shiraz University); ibid, 4.6 km north of Khajeh Jamali, 1950 m, 53°48'50.76"E, 29°51'18.24"N, 14.VI. 2004 A. R. Khosravi, A. Mousavi & M. Soltani 23955 (Herb. Shiraz University); Fars, 10 km S. E. of Sarvestan, Post-e Chenar, 1750 m, 4.VI.1983 V. Mozaffarian, 46720 (TARI); ibid, 22.X.2006 A. Hatami (Herb. Shiraz University); Kerman, Kuh Panj Bardsir, Derkht Gaz village, 2600 m, 5.V.1990 Y. Emamipoor (Herb. Shiraz University).

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