Aconogonon coriarium (Grig.) Sojak. *Aconogonon tortuosum* (D.Don) Hara var. *tibetanum* (Meisn.) S.-P.Hong

Polygonaceae

Hassan Sher, Rainer W. Bussmann, Narel Y. Paniagua-Zambrana, and Ikram Ur Rahman

Synonyms

***Aconogonon coriarium* (Grig.) Sojak.:** *Polygonum coriarium* Gilg.
***Aconogonon tortuosum* (D.Don) Hara var. *tibetanum* (Meisn.) S.-P.Hong:** *Polygonum tortuosum* D. Don

Local Names

***Aconogonon alpinum*: Jammu:** Palkrach
***Aconogonon molle*: Nepali:** Thotne

H. Sher
Faculty of Life Sciences, University of Swat, Mingora, Pakistan

R. W. Bussmann (✉)
Department of Ethnobotany, Institute of Botany and Bakuriani Alpine Botanical Garden, Ilia State University, Tbilisi, Georgia

Saving Knowledge, La Paz, Bolivia
e-mail: rainer.bussmann@iliauni.edu.ge

N. Y. Paniagua-Zambrana
Department of Ethnobotany, Institute of Botany and Bakuriani Alpine Botanical Garden, Ilia State University, Tbilisi, Georgia

Saving Knowledge, La Paz, Bolivia

Herbario Nacionál de Bolivia, Universidad Mayor de San Andrés, La Paz, Bolivia

I. Ur Rahman
Hazara University, Mansehra, Pakistan

United Nations Development Programme, Islamabad, Pakistan

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Botany and Ecology

***Aconogonon coriarium*:** An erect, 1–1.5 (−2.5) m tall perennial herb. Stem somewhat divaricately and profusely branched, mostly glabrous or with few hairs usually below the nodes. Leaves (3.5–) 4–12 × 2–4.5 (−5) cm, ovate to ovate-lanceolate, petiole 3–4 mm long, acute to acuminate, broadly cuneate or rounded at the base, mostly entire, ciliate at the margin, glabrous above, sparsely to densely pubescent below. Ochrea 1.5 (−1.8)-2.8 (−3) cm long, ovate to orbicular, membranous, caducous, glabrous or pilose, brown. Inflorescence a branched terminal panicle with numerous dense flower clusters, 5–12 cm long, branches nodding in fruit. Flowers creamy white, 3.0–3.5 mm across, pedicel 2–5 mm long. Ochreolae ovate-orbicular, brown, membranous, pellucid, glabrous. Tepals 5, subequal, obovate, rounded or blunt at the apex, 3–5 (−6) × 1.5–3 (−3.5) mm. Stamens 8, filaments much longer than the anthers. Ovary, 3.0–4.0 × 1.75–2.75 mm, lanceolate ovate-trigonous with 3, very small styles; stigmas capitate. Nuts subsessile, ovate, trigonous, not beaked 3–5 × 2–3.5 mm, smooth, ± dull brownish, included or slightly exserted from the tepals. Flowering June–July. Grows in between the altitudinal ranges of 1400 and 3500 m on damp slopes along with the streams; Distribution: Kazakstan, Tadzhikistan, Uzbekstan, Turkemenistan, Afghanistan, and Pakistan (Ali and Qaiser 1995–2020; Figs. 1, 2, and 3).

***Aconogonon tortuosum*:** Erect, 30–150 cm high, branched, pubescent to hairy, perennial subshrub with ± elongated rhizome. Stem ± terete, profusely, dichotomously branched from base or above, pubescent to hairy or glabrous, woody. Leaves (1–) 1.5–4 (−6.8) × (0.9–) 1.0–3 (−3.5) cm, elliptic, lanceolate-ovate, acute, or

Fig. 1 *Polygonum aviculare* (Polygonaceae), Adjara, Georgia. (Photo R.W. Bussmann & N.Y. Paniagua-Zambrana)

Fig. 2 *Polygonum aviculare* (Polygonaceae), Adjara, Georgia. (Photo R.W. Bussmann & N.Y. Paniagua-Zambrana)

obtuse at the apex, margin entire or undulate, ciliate or scabrous or glabrous; glabrous or pubescent on both sides with slightly rough or coriaceous texture, petiole 0.5–4.0 mm long. Ochrea 5.0–15 mm long, ovate-broadly ovate, entire to dentate, tubular, truncate, hairy. Inflorescence many flowered, dense, pubescent, up to 2.0 cm long pedunculate, terminal or axillary panicles; panicles (0.8–) 1.5–5 (−7) cm long. Flowers 2–3.5 mm across, pedicel 1–2.5 mm long, slightly longer in fruit. Ochreolae 1.5–3 mm long, lanceolate, cartilaginous, ciliate, hairy. Tepals 5, creamy white, subequal, 1.5–3.5 × 0.75–1.25 mm, ovate to ovate elliptic, obtuse, entire, parallel veined, veins 3. Stamens 8, subexserted, filaments long, equal. Ovary 0.5–1.5 × c. 1.0 mm, oblanceolate, trigonous with three short styles and capitate stigma. Nuts (2–) 2.5–4 × 1.5–1.9 mm, ovate, brown, shining, included or slightly exserted from the tepals. Two varieties are recognized in our region (Ali and Qaiser 1995–2020).

Phytochemistry

Catechins. flavonoids (kaempferol, quercetine), carbohydrates, anthocyanines (delphinide, emoine), steroids, catcheins, saponins, alkaloids, organic acids (oleic, oxalic, malic, citane, lemon), vitamins (C, carotene), phenolic compounds, tannins, phenolcarbonic acids, coumarins (Fedorov 1949).

Fig. 3 *Polygonum aviculare* (Polygonaceae), Adjara, Georgia. (Photo R.W. Bussmann & N.Y. Paniagua-Zambrana)

Local Medicinal Uses

***Aconogonon coriarium*:** In the Altai the plants are used to treat arthritis, cough, liver and urinary diseases, and tuberculosis. In Middle Asia the infusion used to treat stomach spasms, intestinal infections, diarrhea, as tonic, hemostatic, and diuretic. The plant is used in a bath to treat bacterial and fungal skin diseases and rashes. The fresh herb is put on tumors, wounds, and skin ulcers (Bussmann et al. 2020a, b, c; Fedorov 1949).
***Aconogonon tortuosum*:** Controls painful urination (Ballabh et al. 2008).
***Aconogonon alpinum*:** Used for joint pain and arthritis (Gairola et al. 2014).

Local Food Uses

***Aconogonon coriarium*:** The young shoots are boiled like spinach, always with a large number of other species (Batsatsashvili et al. 2017; Bussmann et al. 2020a, b, c; Fedorov 1949). The aboveground parts until flowering are used boiled. The plant can also be used dried form for cooking dovga (is a soup cooked from curdled milk (yogurt), various greens, a small amount of rice and egg. In some regions of the country also a small amount of peas is added. It is considered good for digestion and for intestinal cramps). Leaves of the plant are used as one of the ingredients added to plov (a common dish in the east. In Azerbaijan rice is boiled on a small fire until soft,

in combination with other ingredients like meat, birds, fish, dried fruits, greens, beans). Such dish possesses constipating properties and is often cooked with the purpose to treat intestinal disorders (Damirov et al. 1988).
***Aconogonon molle*:** Young shoots are eaten as vegetable (Dangol et al. 2017).

Local Handicraft and Other Uses

***Aconogonon coriarium*:** The leaves yield green, blue and yellow dyes for wool and silk. Used as fodder (Fedorov 1949). *Polygonum aviculare* is used in poultry farming. The seeds are good feed for poultry, mainly for geese (Akhundov et al. 1989). A dark blue color is obtained from the root for dyeing wool (Akhundov et al. 1989). Good nectariferous plant, producing much nectar (Akhundov et al. 1989).

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