

Rhus coriaria L. - ANACARDIACEAE



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Rhus coriaria L.

Synonyms: *Rhus amoena* Salisb.; *Rhus coriaria* var. *zebaria* Shahbaz; *Rhus heterophylla* C.C.Gmel.; *Rhus sumac* O.Targ.Tozz.; *Rhus variifolia* DC.; *Toxicodendron coriaria* (L.) Kuntze.

Local Names

***Rhus coriaria*:** **Russian:** Сумах дубильный (Sumakh dubilniy); **Uzbek:** Totum; **Tadjik:** Татум (Tatum); **English:** Tanner's sumach.

Botany and Ecology

***Rhus coriaria*:** Small, comparatively few-branched trees or often shrubs, 1–3 (5) m high; bark on annual shoots gray-brown, scabrous-hairy, on perennial branches brown; leaves 15–18 cm long, imparipinnate, with 9–17 leaflets; petioles

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scabrous-hairy, winged in upper part; leaflets scabrous-hairy, sessile, oblong-ovate or lanceolate, largely crenate-serrate, 3–5(6) cm long, (1.5) 2–3 cm wide, rounded or broadly cuneate at base, acuminate at apex. Flowers greenish-white, in terminal oblong- conical panicles, sometimes partly in small axillary panicles, sessile, unisexual, staminate and pistillate flowers in different racemes, staminate flowers in loose longer panicles up to 20–25 cm long; sepals 5, greenish, densely hairy and ciliate outside, orbicular-ovate, ca. 2 mm long, 1–1.5 mm wide; petals 5, whitish, ovate, 2.5–3.5 mm long, ca. 1.5 mm wide; stamens 5, attached at base of a broad disk bearing a rudimentary (undeveloped) ovary; filaments ca. 1.5 mm long; anthers ca. 1.5 mm long; pistillate flowers in smaller dense panicles up to 15 cm long, hardly distinguishable from the male flowers except for the presence of a developed ovary with 3 stigmas and 5 rudimentary small stamens with nearly undeveloped anthers; fruit globose or reniform, 0.5–0.6 cm in diameter, red-brown, densely glandular-hairy. Flowering: June–July, Fruiting: September–October. Dry, usually stony slopes in the lower and central mountain belts. In Crim. – stony and rocky slopes of the southern coast, up to ca. 700 m above sea level; in W. Kopet – Dag and Pamir, 900–1700 m (Shishkin 1949) (Figs. 1, 2, 3 and 4).

Phytochemistry

The main active substance of *Rhus coriaria* tannin is contained in leaves and seeds, up to 30%. Polyphenols, myricetin, quercetin-3-O-ramnoside, myricetin-3-O-glucoside, myricetin-3-O-glucuronide, myricetin-3-O-ramnoglycoside are determined. In addition to it, flavonoids, essential oil, about 112 mg% of vitamin C, up to 64.6 mg% of vitamin K. Sumac essential oil contains terpene hydrocarbones

Fig. 1 *Rhus coriaria*
(Anacardiaceae), Tashkent,
Uzbekistan. (Photo
O.K. Khojimatov)



Fig. 2 *Rhus coriaria*
(Anacardiaceae), Tashkent,
Uzbekistan. (Photo
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Fig. 3 *Rhus coriaria*
(Anacardiaceae), Tashkent,
Uzbekistan. (Photo
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Fig. 4 *Rhus coriaria*
(Anacardiaceae), Tashkent,
Uzbekistan. (Photo
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(α -pinen, β -kariofillen, cambrene), terpene oxygenates (α -terpineol, carvacrol, β -kariofillena 194 ethylate), farnesyl acetate, hexahydrofarnesyl acetone, aliphatic aldehydes. In sumac berries, salts Al, Ca, Cd, Cr, Cu, Fe, K, Mg, Na, Ni, Pb, Zn are determined (<https://planta-medica.uz/rhus-coriaria-l-sumah-dubilnyj/>).

Local Medicinal Uses

Folk medicine uses *Rhus coriaria* in the treatment of intestinal disorders, in hypertension and diabetes mellitus. In addition, it is believed that sumac is able to have a hemostatic and emetic effect. In Tajikistan, fruits are advised to be used for tumors. It is believed that fried, crushed sumac fruits can help with gonorrhoea and cholera (Dadabaeva 1996; Sakhobiddinov 1948). Homeopaths treat typhus leaf tincture, rheumatism, gout, cholelithiasis, paralysis, general decline (Khojimatov 2021). A water infusion of leaves and mature fruits of sumach is applied internally to treat diarrhoea and dysentery and has as astringent and antiseptic properties. The fruit powder is diluted in water and used as antipyretic for malaria (Damirov et al. 1988; Fedorov 1949). Fruit powder is also used to increase appetite as well as a poultice on blastema (Damirov et al. 1988). The water infusion of leaves and mature fruits is used as antiseptic for gargles to treat inflammatory process in the mouth cavity (Grossheim 1946; Damirov et al. 1988). In diseases of the biliary tract, as haemostatic, emetic, as homeopathic medicine, it is used for typhoid fever, diarrhoea, rheumatism, gout, steam, asthenia. In folk medicine, the infusion is an astringent and anti-inflammatory, for washing wounds, with burns, weeping ulcers, for rinsing the mouth, washing the eyes. Fruits. Infusion, alcoholic extract, decoction – at the initial stage of diabetes mellitus. Fortifying, emetic and with scurvy, with gastritis, hepatocholecystitis, bleeding. Decoction for dysentery, rinsing for tonsillitis and antipyretic, poultices for tumours. Has antitumor activity. Pericarp infusion for ulcerative colitis, vomiting, to quench thirst and stimulate appetite, mixed with *Plantago* sp. – for washing wounds. Fried, crushed and infusion – for diarrhoea and cholera (Sokolov 1988).

Medicinal Uses of Other Species

Rhus natalensis: Rots are pounded in water and the extract is drunk for flu, abdominal pain and gonorrhoea, hookworm and diarrhoea. Leaves are used to treat cough, and the steam from boiled leaves is inhaled for colds. The leaf decoction is drunk for stomach-ache, especially in children (Kokwaro 2009). Used to remedy stomach-ache (Bussmann 2006). The fruits are eaten to prevent chest problems, and the twigs used as toothbrush (Bussmann et al. 2006). The plant serves also as antimalarial (Njoroge and Bussmann 2006), and to treat back pains, diarrhoea, anthrax, postpartum pains and toothache (Njoroge et al. 2004).

Rhus tenuinervis: Young shoots and leaves chewed for heartburn (Kokwaro 2009).

Rhus vulgaris: Boiled fruits are used for diarrhea. Boiled stems applied to wounds. Powdered roots are used for gonorrhoea, the leaves for hemorrhoids (Kokwaro 2009). The fruit decoction is used for diarrhea (Beentje 1994). The plant serves also as antimalarial (Njoroge et al. 2004; Njoroge and Bussmann 2006).

Rhus ruspolii: Used to remedy stomachache (Bussmann 2006) and to treat wounds (Giday et al. 2009).

Local Food Uses

Rhus coriaria is used as spice (Yesil et al. 2019). Sumac is widely used in Turkish cuisine for dressing salads, in the Caucasus – for pickling kebabs. Sumac gives the dishes a sour taste and is often used instead of lemon. Sumac is widely used in Central Asian cuisine, practically replacing lemon, moreover, giving dishes a pink (in greater quantities – cherry red) color. Sumac is placed in fish and poultry dishes, marinades, salads, kebabs, legume dishes. In Turkey and Iran, rice is sprinkled with ground sumac. In Lebanon, Syria and Egypt, a very thick decoction of sumac berries is added to meat and vegetable dishes. Sumac yogurt sauce is served with kebabs. Salads and exquisite desserts are seasoned with them (<https://inlnk.ru/0QnK15>)

Food Uses of Other Species

Rhus natalensis: The fruit is eaten (Beentje 1994; Bussmann 2006).

Rhus tenuinervis: The fruit is eaten (Beentje 1994).

Rhus vulgaris: The fruit is eaten (Beentje 1994).

Rhus ruspolii: The fruit is edible (Bussmann 2006).

Local Food Uses

Rhus coriaria: The peel of fruits contains tartaric acid. Dried peel is ground into a dark-red powder and used as strong acidic seasoning for meat and fish dishes to increase appetite and improve digestion. Sumach is also used in making tonic drinks and food dyes (Fedorov 1949). In the Caucasus, pickled and dried are used for meat and fish dishes. ***Rhus coriaria*** is one of the valuable plants for tanning and dyeing; such plants, so-called “leaf tanning agents,” contain tannides mainly in the leaves. Ornamental (Shishkin 1949).

Local Handicraft and Other Uses

Rhus coriaria: Yellow color is obtained from the stem bark, black from leaves, brown from the root bark, and red from the fruits (Grossheim 1946; Flora of Azerbaijan 1950-1961). Sumach is a valuable tanning plant with tannins concentrated in the leaves. It is predominantly used for curing and tanning sheepskin, obtaining light and soft leather. The wood is hard, but easy to work and useful for crafts and fine joinery works (Flora of Azerbaijan 1950-1961). Sumach is a decorative plant, mainly in autumn, when the leaves turn bright purple. The species is suitable for reforestation of steep ravines for erosion control (Flora of Azerbaijan 1950-1961). Branches, bark, leaves, fruits to dye leather, wool, silk in different tones depending on the mordant. Broth – for nausea, vomiting, hemoptysis any Raw material for obtaining medicalotinin. Rinsing – for inflammatory processes in the mouth, nose, throat, larynx; ointment – for burns, ulcers, cracks, bedsores. Detoxification – in case of poisoning with salts of alkalides and heavy metals. It is included in the Novikov antiseptic liquid, as well as in the preparation “tanalbin” – an astringent and disinfectant for acute chronic diarrhea, colitis and enteritis. In calico printing for fixing basic dyes. Suitable for the manufacture of ink. Decorative and to stabilize the soil. The essential oil is suitable for use in soap making. To add strength to vinegar or its substitute (Sokolov 1988).

Handicraft and Other Uses of Other Species

Rhus natalensis: A bark infusion is given to livestock with East Coast Fever (Kokwaro 2009). The leaves are browsed by livestock (Bussmann 2006). Burnt for its good smell and used as firewood (Bussmann et al. 2006). Given top livestock to treat endometritis and foot and mouth disease (Muthee et al. 2011). Produces excellent charcoal (Tian 2017).

Rhus vulgaris: A root decoction is used for diarrhea in livestock (Kokwaro 2009).

Rhus ruspolii: The leaves are browsed by livestock (Bussmann 2006).

Rhus glutinosa is used as fuelwood (Mekonnen et al. 2015).

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