

# *Althaea armeniaca* Ten., *Althaea cannabina* L., *Althaea nudiflora* Lindl., *Althaea officinalis* L. - MALVACEAE



Olim K. Khojimatov and Rainer W. Bussmann

## ***Althaea armeniaca* Ten.**

Synonyms: *Althaea broussonetiifolia* Iljin; *Althaea hyrcana* Grossh.; *Althaea micrantha* Borbás; *Althaea officinalis* subsp. *micrantha* Dostál; *Althaea officinalis* subsp. *pseudoarmeniaca* (Polg.) Kárpáti ex Soó; *Althaea taurinensis* C.A.Mey.

## ***Althaea cannabina* L.**

Synonyms: *Althaea kotschyi* Boiss.; *Althaea narbonensis* Jacq.; *Althaea narbonensis* Pourr. ex Cav.

## ***Althaea nudiflora* Lindl.**

Synonyms: *Alcea nudiflora* (Lindl.) Boiss.

## ***Althaea officinalis* L.**

Synonyms: *Althaea balearica* J.J.Rodr.; *Althaea kragujevacensis* Pancic; *Althaea multiflora* Rchb. ex Regel; *Althaea pulchra* Klotzsch; *Althaea sublobata* Stokes; *Malva althaea* E.H.L.Krause; *Malva maritima* Salisb.; *Malva officinalis* (L.) K.F.Schimp. & Spenn.

---

O. K. Khojimatov

Tashkent Botanical Garden named after Academician F. N. Rusanov at Institute of Botany of Uzbek Academy of Sciences, Tashkent, Uzbekistan

e-mail: [olimchik@mail.ru](mailto:olimchik@mail.ru)

R. W. Bussmann (✉)

Department of Ethnobotany, State Museum of Natural History, Karlsruhe, Germany

Department of Ethnobotany, Institute of Botany and Bakuriani Alpine Botanical Garden, Iliia State University, Tbilisi, Georgia

e-mail: [rainer.bussmann@smnk.de](mailto:rainer.bussmann@smnk.de); [rainer.bussmann@iliauni.edu.ge](mailto:rainer.bussmann@iliauni.edu.ge)

## Local Names

***Althaea armeniaca***: **Language:** **Russian:** Алтей армянский (Altei armyanskiy); **Uzbek:** Gulxairi; **Tadjik:** Gulixairi (Dadabaeva 1996)

***Althaea cannabina***: **Language:** **Russian:** Алтей коноплевый (Altei konoplevii); **Uzbek:** Gulxairi; **Tadjik:** Garmash (Dadabaeva 1996)

***Althaea nudiflora***: **Russian:** Алтей голоцветный (Altei golotsvetnyy); **Uzbek:** Oq gulhairi; **Kyrgyz:** Туксузгулдуугулкайыр (Tuksuz gulduu gulkauyr); **English:** Naked flowered hollyhock

***Althaea officinalis***: **Russian:** Алтей лекарственный (Altei lekarstvenniy); **Uzbek:** Dorivor gulhairi, Gulxairi; **Kyrgyz:** Дарьгулкан (Dary gulkan); **Tadjik:** Gulixairi (Dadabaeva 1996); **English:** Common marshmallow (Sokolov 1985).

***Althaea armeniaca***: Perennial, 50–200 cm high, erect, sometimes branched only in inflorescence. Stem terete, densely velutinous with stellate-fascicled hairs, in lower part glabrous or sparsely hairy and often dingy -purple. Leaves petiolate, ribifoliate, lower often scarcely lobed, irregularly and coarsely dentate. Middle leaves with petioles 2–5 cm long, blade 6–12 cm long and 6–12 cm broad, 5-parted with broad ovate or oblong-ovate lobes, truncate or very shallowly cordate at base; upper leaves mostly 3-cleft, very rarely dissected nearly to base, rounded or cuneate at base. All leaves densely hairy, especially beneath, lower leaves often with relatively dense indument on upper surface; stipules linear, falling in flower. Flowers in a racemose-paniculate leafy terminal inflorescence often solitary in leaf axils and then always shorter than leaves, with pedicels 0.5–5 cm long, mostly borne on axillary floriferous branchlets, short-pedicel, in groups of 3 to many or in umbels about equaling or surpassing corresponding leaves. Epicalyx of 7–10 lanceolate or linear segments united at base, 6–8 mm long, about equaling calyx length. Calyx 8–12 mm long, parted to 12 s into oblong-ovate or ovate lobes, these connivent above fruit. Corolla pink, 1/2 ~ 2 times as long as calyx. Petals obovate to oblong-obovate, 12(10)–17(20) mm long and 6–12 mm broad, with small apical notch, claw hairy-fringed. Staminal column and filaments sparsely and minutely papillose. Fruit 6–9 mm in diameter. Carpels 14–20, back stellate -pubescent, except for the glabrous lower part which does not extend above middle, with prominent dorsal line and transversely wrinkled margins. Sides transversely wrinkled in rather narrow marginal area, smooth central part thinly and finely farinaceous. Carpels ca. 3 mm long and 2.5 mm broad, back 1–1.5 mm broad. Seed reniform, 2–2.5 mm long and 1.75–2 mm broad, brown or grayish-brown, glabrous and smooth, not verrucose. Flowering June–September, fruiting July–October. River floodplains, dry and solonchak meadows, bottomland scrub, sea and lake shores, borders or irrigation canals, forest openings, weed-infested woods, vineyards, field borders, rice paddies, gardens, and railroad embankments (Shishkin 1949) (Figs. 1, 2, and 3).

**Fig. 1** *Althaea armeniaca* (Malvaceae), Tashkent, Uzbekistan. (Photo O.K. Khojimatov)



**Fig. 2** *Althaea armeniaca* (Malvaceae), Tashkent, Uzbekistan. (Photo O.K. Khojimatov)



**Fig. 3** *Althaea armeniaca* (Malvaceae), Tashkent, Uzbekistan. (Photo O.K. Khojimatov)



***Althaea cannabina***: Perennial, 50–180 cm high, virgately much branched; roots thick; stem mostly erect, terete, hairy from base, covered throughout even in fruiting sparsely in lower part, more densely above, with short-stellate hairs, these with rays usually appressed and less than 1 mm long; petioles shorter than blade, in middle leaves 1–6 cm long; upper and partly middle leaves hemp-like, 3-parted to base, segments lance-oblong, narrowing toward base (especially central), coarsely and unevenly serrate, usually with larger tooth near middle, lateral segments (except in uppermost leaves) with linear-oblong or oblong, divergent, and somewhat retrorse lobe (hence leaf seemingly 5-cleft); middle leaves 4–12 cm long and 3–13 cm broad, often with broader segments; lower leaves often shaped like geranium leaves, 5-parted, with oblong to suboval lobes; all leaves covered on both sides with many-rayed stellate hairs, more copiously beneath; stipules linear, caducous; flowers in axils solitary, on often reclinate pedicels to 10 cm long or on 2- or 3-flowered peduncles to 20 cm long, with pedicels 1–3 cm long; both pedicels and peduncles longer than leaves, often 2–4 times; epicalyx 5–10 mm long, two-thirds length of calyx, of 7–9 lanceolate or oblong acuminate segments united to one-third or rarely to middle; calyx 8–12 mm long, parted to two-thirds into broadly ovate or rarely oblong-ovate point-tipped lobes, these connivent in fruit; corolla red or reddish-lilac, 2–3 times length of calyx; petals 18–20(12–30) mm long and 10–15(6–17) mm broad, broadly obovate or oblong-obovate, shallowly notched, claw hairy; staminal column and filaments roughened with scattered and very short papillae; fruit 7–9 mm in diameter; carpels 12–6, back glabrous throughout, with distinct dorsal ridge, with transversal wrinkles extending onto sides; carpel sides smooth and lightly farinaceous in central part; the carpel 3–3.5 mm long and 2.5–3 mm broad, back 1–2 mm broad; seed dark brown or grayish-brown, reniform, 2.5–3 mm long and 2–2.5 mm broad, glabrous, covered with small light-colored warts. Flowering June–September, fruiting July–October. Light deciduous woods, more rarely pine woods, wood margins, shrub thickets (*Cotoneaster*, *Paliurus*, etc.), especially on stony slopes, chalk slopes and limestone, meadows, rarely needlegrass and forb steppes, weedy places, roadsides, waste places, pastures, and parks (Shishkin 1949) (Figs. 4, 5, 6, and 7).

***Althaea nudiflora***: Perennial, 75–200 cm high; stems simple, mostly several, erect or rarely angularly curved at base, terete or slightly angled, unbranched, sometimes dingy-purple at base, rarely almost glabrous (f. *subgiabra* Iljin), commonly with scattered long-rayed stellate hairs, these interspersed in upper part of stem with more numerous small stellate hairs (f. *pilosa* Iljin); more rarely whole plant rather densely hairy, in lower part with dense coat of long-rayed stellate recurved hairs (f. *hirsutissima* Iljin); leaves long-petioled; petioles hairy, lower 14–28 cm long, greatly exceeding blade, middle slightly longer than to equal to blade, upper shorter than blade; leaf-blade large, round in outline, cordate at base, rather shallowly 7-lobed (upper 5-lobed, uppermost 3-lobed); lobes semiorbicular to suboblong, outer ones in lower leaves sometimes overlapping, obtuse and crenate-dentate (f. *obtusiloba* Iljin), more rarely acute and sharply dentate (f. *acutiloba* Iljin); uppermost leaves much reduced in size, very shallowly cordate to subtruncate at base, with somewhat elongated central lobe; lower surface prominently netted-veined, stellate-pubescent, upper with more scattered stellate hairs or subglabrous; stipules

**Fig. 4** *Althaea cannabina*  
(Malvaceae), Tashkent,  
Uzbekistan. (Photo  
O.K. Khojimatov)



**Fig. 5** *Althaea cannabina*  
(Malvaceae), Tashkent,  
Uzbekistan. (Photo  
O.K. Khojimatov)



**Fig. 6** *Althaea cannabina*  
(Malvaceae), Tashkent,  
Uzbekistan. (Photo  
O.K. Khojimatov)



**Fig. 7** *Althaea cannabina* (Malvaceae), Tashkent, Uzbekistan. (Photo O.K. Khojimatov)



3- or 4-parted, pubescent, caducous; flowers in elongated raceme, about equal to subtending leaves; pedicels 0.5–3 cm long; epicalyx 10–15 cm long, parted to 6 or 7(5) oblong to oblong-ovate subacute segments; calyx 16–22 mm long, from less than 1/2–2 times length of epicalyx, divided to oblong subacute lobes; both epicalyx and calyx copiously stellate -hairy; corolla white, at base yellowish, when dry somewhat rosy -tinged with greenish base, 2/2.5 times length of calyx; petals broadly obovate or oblong-obovate, 3.5–6.5 cm long and 3–6 cm broad, distinctly notched at apex, attenuate claw densely woolly at base; fruit 16–22 mm in diameter, with conic or flattened hairy carpophore; carpels 28–34, strongly compressed, mostly ovate or almost round, 3.5–6 mm long and 5–6.5 mm across, back 1.5–2 mm broad, wings thin, radially wrinkled, glabrous, entire (angular at outlets of veins), 0.75–1.5 mm broad, extending throughout carpel except hairy beak; narrow dorsal channel stellate -hairy at bottom; sides around notch somewhat convex, glabrous, part between this raised section and glabrous wings densely covered with antrorse hairs, or very rarely hairs scarcely developed (f. *leiocarpa* Iljin); seed lunate, slightly elongate and often slightly hairy at upper end, rounded at lower end, scarcely channeled on back, 3–3.5 mm long and 2–3 mm broad, reddish-brown or almost gray, glabrous or densely pustulose, dull. Flowering end of May–September; fruiting July–September. Altai, Middle Asia, in meadows, mountain steppes; steppelike and exposed plant habitats; stony steppe slopes, dry meadows, rocks, screes, fallows, and fields of the mountain zone (Shishkin 1949).

***Althaea officinalis*:** Perennial, 60–150 cm high, covered with many-pronged or sub-stellate hairs, in upper part often velutinous -sericeous; rhizome branched, with rather fleshy thickish roots; stem erect, simple or slightly branched, one to several, terete, lower part glabrous at flowering, sometimes dingy -purple, in thicker stems with interrupted longitudinal furrows passing at base into almost reticulate pattern with elongated loops; petioles usually much shorter than blade, 2–6.25 cm long; lower leaves broad -ovate to almost round or reniform, with cordate, rounded or truncate base, mostly obtuse, often with one or two weak lobes on each side, wilting at flowering and fruiting; middle leaves similar, mostly rounded or truncate at base,

more entire, 5–15 cm long and 3–12.5 cm broad; upper leaves ovate or oblong-ovate, acute, rounded or broadly cuneate at base; all leaves irregularly crenate-dentate, usually more densely hairy beneath; stipules narrowly lanceolate or linear, caducous; flowers on pedicels 2–10 mm long, borne on many-flowered, rarely 2- or 3-flowered peduncle in axils of upper and middle leaves, peduncle (with flowers) equaling or slightly exceeding petiole, rarely to 12 cm long; solitary flowers on pedicels 2–4 cm long occasionally arise from axils in addition to peduncles; epicalyx of 8–12 linear segments connate only at base, 3–6 mm long, about half calyx length; calyx 6–12 mm long, divided to two-thirds into triangular-ovate acuminate lobes, half-length of corolla, enclosing fruit; corolla pale rose or almost white, rarely reddish-rose; petals 10(8)–20(21) mm long and 6–17 mm broad, broadly obovate to oblong obovate, shallowly notched at apex, sides of claw hairy-ciliate; staminal column and filaments sparsely scaberulous -papillose; fruit 7–8(10)mm across, of 15–25 carpels; carpels 3–3.5 mm long, 2.5–3 mm across (view from the side), back 1–1.5 mm broad, with rather faint dorsal nerve and slight transverse wrinkles, with obtuse slightly rounded margins, densely covered throughout with stellate hairs; sides thin, glabrous and smooth, slightly wrinkled radially and hairy only in narrow marginal strip; seed dark brown, glabrous and smooth, reniform, 2.5 mm long and 1.75 mm broad. Flowering and fruiting July–August (September). Ural, Caucasus, Altai, Middle Asia, on meadows, especially on salin soils, in coastal thickets, on boggy areas, on banks of irrigation ditches and rivers, on solonchaks (Shishkin 1949).

## Phytochemistry

Carbohydrates (glucose, sucrose, starch, pectin pentoses, methylpentosans, uronic acids, pentosans, D-galacturonic acid, L-arabinose L-rhamnose, D-glucose, D-galactose, ralacturonic acid, xylose, rhamnose, galactose, arabinan, galactan), organic acids (malic acid), essential oils, latex-like substances, steroids (phytosterol), nitrogen-containing compounds (betaine), vitamins (C, carotene), tannins (Sokolov 1985). Dry roots of the altea contain up to 35% of mucous substances, the main ingredients of which are polysaccharides - pentosans and hexosanes, which give pentose, galactose and dextrose during hydrolysis. The roots also contain up to 37% starch, 2% l-asparagine, 8% sugars, 11–16% pectin, 1.7% fatty oil, betaine, carotene, phytosterols, mineral substances, a lot of starch, uronic acids, mineral salts. The grass is also rich in polysaccharides (Akopov 1990; <https://planta-medica.uz/altej-armyanskij-althaea-armeniaca-ten-gulhajri/>).

## Local Medicinal Uses

*Althaea armeniaca*, *Althaea cannabina* and *Althaea officinalis*: In folk medicine used as an anti-inflammatory and enveloping agent for respiratory and digestive diseases. Orally applied water infusion is used for inflammatory diseases of the

respiratory tract and pharynx, accompanied by difficult sputum pumping, for tonsillitis, tracheitis, stomatitis, gingivitis, glossitis.

*Althaea armeniaca* reduces cough, increase mucus excision and facilitate sputum evacuation in acute and chronic bronchitis, pneumonia, bronchiectatic disease, pulmonary tuberculosis, emphysema, acute respiratory diseases. In acute gastrointestinal diseases, especially those accompanied by diarrhea, the infusion containing a large amount of starch is used not only as a therapeutic, but also as a nutrient. Infusion is prescribed inside for eczema, psoriasis, neurodermitis, dermatitis to normalize metabolism. Externally, the root is used as a softening agent (Akopov 1990; Dadabaeva 1996; Khojimatov 2021; Sakhobiddinov 1948; Shishkin 1949; <https://planta-medica.uz/altej-armyanskij-althaea-armeniaca-ten-gulhajri/>). In traditional medicine as infusion used for tuberculosis, cough, bronchitis, as eye-wash in case of blepharitis, for the treatment of gastritis, enterocolitis, cystitis, and diarrhea. Also used to eliminate irritation during inflammatory and ulcerative processes of the mucous membranes, for skin tumors and furunculosis. In Azerbaijan the plants are used for the treatment of scabies and allergic dermatoses, and as tea for colds and cough. in Tajikistan against vomiting. As expectorant, enveloping and anti-inflammatory in the composition of the thoracic collection for diseases of the upper respiratory tract. In folk medicine for pneumonia, bronchial asthma and treatment of purulent wounds and scrofula (Sokolov 1985).

## Folk Recipes

The roots of the *Althaea* and leaves of the mother-and-stepmother in the 2 part, the herbs of the shower 1 part. Infusion of 1 tablespoon of mixture per 200 ml of water is prepared. One takes 1/2 cups 3–4 times a day in warm form.

The roots of the *Althaea* 1 part, the roots of licorice 1 part, the roots of the moth 1 part. The decoction is prepared from 2 teaspoons of the mixture per 200 ml of water. 1/2 cups are taken in warm form every 3 hours.

With the decoction of flowers and leaves, women wash their hair, as it supposedly strengthens and improves their growth.

## Local Handicraft and Other Uses

In veterinary medicine used to treat inflammations of the respiratory tract, gastrointestinal tract, and as anti-inflammatory. The stems yield coarse fibers. The leaves are used to dye wool red, bluish-black, gray and dark purple. Planted as ornamental. Soaking of the stems aerobically for 5 days yields up to 11.3% white good quality silk, good quality for making rope. All species are ornamental and melliferous plants (Sokolov 1985).



## References

- Akopov IAe (1990) Vajneishie otechestvennie lekarstvennie rasteniya i ikh primeneniye – Tashkent: Medicina, 446 p. (In Russian)
- Dadabaeva O (1996) Dikorastushie lekarstvennie rasteniya flori Tadzhikistana – Khujand: Rakhim Djalil, 585 p. (In Russian)
- <https://planta-medica.uz/uz/althaea-armeniaca-ten-gulhajri/>
- Khojimatov OK (2021) Lekarstvennie rasteniya Uzbekistana (properties, use and sustainable using). – Tashkent, “Ma’naviyat”, 328 p. (In Russian)
- Sakhobiddinov SS (1948) Dikorastushie lekarstvennie rasteniya Srednei Asii. – Tashkent: Gosizdat UzSSR, 216 p. (In Russian)
- Shishkin BK (1949) (English 1974) Flora of the USSR, Vol. 15: Malvales, Parietales, Myrtiflorae. Akademia Nauk, Leningrad, 565 p, 33 b/w plates, 2 maps
- Sokolov PD (ed) (1985) Plant resources of the USSR: flowering plants, their chemical composition, use, vol 2. Families Paeoniaceae - Thymelaeacea. Akademia Nauk, Leningrad, 336 p. (in Russian)