
2 | Althaea officinalis

L.



Common Names

Altea	France	Khatmi	India
Altea	Peru	Marsh mallow	USA
Althea	USA	Marsh mallow	USSR
Bardul Khatmi	India	Marsh mallow	Bolivia
Bon visclo	France	Marsh mallow	Poland
Eibisch	France	Malva blanca	France
Erva molle	Italy	Malvavisco	Bolivia
Guimauve	France	Malvavisco	Peru
Guimauve	Tunisia	Marmolone	Italy
Hobbiza	Tunisia	Suzmool	India
Khairi	Arabic countries	Sweet weed	USA
Khatmi-ka-phool	India	Wymote	USA

BOTANICAL DESCRIPTION

This perennial herb of the MALVACEAE family is a 60–120 cm high hardy, velvety plant that has an erect root up to 50 cm long and a few cm thick with secondary roots. The succulent stem is usually woody at the base and unbranched. The leaves are short-petioled with an ovate, acute leaf-blade. The secondary leaves are narrow and drooping. The lower leaves are 5-lobed, the upper cauline leaves are often triangular, more wide than long. The reddish-white flowers are usually in axillary or terminal clusters; the 6–9 sepals of the epicalyx are fused at the base, and are 8–10 mm long and

pointed; 5 sepals, 5 heart-shaped petals and numerous stamens are fused together with the anthers to a column. The ovaries in a ring, numerous styles; mericarps smooth and downy. The 5-8 mm fruit is disc-like and breaks up into the mericarps that are downy on the outside and often have fine, branched, radiating ribs. The seeds are dark-brown, glabrous, kidney-shaped and somewhat compressed.

ORIGIN AND DISTRIBUTION

A native of the British Isles and the temperate regions of India, it is now distributed throughout Europe and can be found in parts of the Americas.

*From: Medicinal Plants of the World, vol. 2: Chemical Constituents, Traditional and Modern Uses
By: Ivan A. Ross Humana Press Inc., Totowa, NJ*

TRADITIONAL MEDICINAL USES

Arabic countries. Hot water extract of the plant is taken orally as an abortifacient and emmenagogue in Unani medicine^{AO0133}.

Bolivia. Infusion of the plant is taken orally as an expectorant^{AO0134}.

France. Infusion of the flower and leaf is taken orally as an emollient and externally as an antiseptic^{AO0113}.

India. Infusion of the dried flower is taken orally as an expectorant^{AO0108}. The root, boiled with black pepper, is taken orally for asthma^{AO0114}.

Italy. Decoction of the dried root is taken orally for constipation^{AO0139}. Decoction of the flower and leaf is taken orally as an antiasthmatic^{AO0110}. Infusion of the root is taken orally for bronchial catarrh and as a gastric protective^{AO0110}.

Peru. Hot water extracts of the dried flower and the dried leaf are used externally as an emollient^{AO0138}. Hot water extract of the dried root is used externally as an emollient^{AO0138}.

Tunisia. The dried leaf is used as a cicatrizant^{AO0135}.

USA. Hot water extract of the dried root is taken orally as an expectorant and externally as a demulcent^{AO0141}. Infusion of the dried leaf is taken orally to treat cystitis^{AO0107}. The root is taken orally for coughs and sore throat^{AO0104}.

CHEMICAL CONSTITUENTS

(ppm unless otherwise indicated)

Aesculetin: Aer, Rt^{AO0108}

Aesculin: Aer, Rt^{AO0108}

Alanine: Rt^{AO0105}

Althaea D-glucan: Lf^{AO0131}

Althaea mucilage O: Rt 0.22%^{AO0129}

Althaea mucilage OL: Lf 550^{AO0101}

Althaea mucilage polysaccharide: Rt^{AO0117}

Althaea mucopolysaccharide: Rt^{AO0116}

Arabinofuranan, L: Rt^{AO0115}

Asparagine: Rt^{AO0105}

Asparaginic acid: Rt^{AO0105}

Astragaline: Fl^{AO0111}, Lf^{AO0103}

Benzoic acid, 4-hydroxy: Lf^{AO0130}, Fl^{AO0121}, Rt^{AO0102}

Butyric acid, 4-amino: Rt^{AO0105}

Caffeic acid: Fl^{AO0106}, Lf^{AO0130}, Rt^{AO0102}

Cichorin: Aer, Rt^{AO0108}

Chlorogenic acid: Fl^{AO0121}

Coumaric acid, para: Lf^{AO0130}, Fl^{AO0121}, Rt^{AO0102}

Coumarin: Aer, Rt^{AO0108}

Diosmetin, 8-hydroxy-3-sulfo-8-0-beta-D-glucoside: Lf^{AO0130}

Diosmetin, 8-hydroxy 8-0-beta-D-glucoside: Lf^{AO0103}

Diosmetin, 8-hydroxy 8-0-beta-D-glucoside-3-sulfate: Lf^{AO0103}

Ferulic acid: Lf^{AO0130}, Fl^{AO0121}, Rt^{AO0102}

Herniarin: Aer, Rt^{AO0108}

Hypolaetin, 8-0-gentiobioside: Fl^{AO0125}

Hypolaetin-4-methyl ether-8-0-glucoside-3-sulphate: Lf^{AO0124}

Hypolaetin-4-0-methyl-ether-8-0-beta-D-glucoside: Fl^{AO0125}

Hypolaetin-8-0-gentiobioside: Lf, Fl^{AO0111}

Hypolaetin-8-beta-gentiobioside: Lf^{AO0120}

Hypoletin-8-glucoside: Lf^{AO0120}

Kaempferol, dihydro, 4-0-beta-D-glucoside: Fl^{AO0125}

Kaempferol, dihydro, 4-0- beta-D: Fl 0.76-0.84%^{AO0126}

Kaempferol, dihydro, 4-0-glucoside: Lf, Fl^{AO0111}

Kaempferol-3-0-beta-D-(6-0-para-hydroxycinnamoyl)-glucoside: Lf^{AO0130}

Luteolin, beta-hydroxy, 8-gentiobioside: Fl¹³⁰⁵⁹

Mucilage (Althaea officinalis): Pl 18-21%^{AO0122}

Naringenin-4-0-beta-D-glucoside: Fl^{AO0125}

Naringenin-4-0-glucoside: Fl^{AO0124}

Phenyl-acetic acid, para-hydroxy: Lf, Fl^{AO0123}

Phenylacetic acid, para-hydroxy: Rt^{AO0102}, Lf^{AO0130}, Fl^{AO0106}

Polysaccharide (Althaea officinalis): Rt^{AO0119}

Populnin: Fl^{AO0121}

Protocatechuic acid: Lf, Fl^{AO0123}

Quercitrin, iso: Fl^{AO0121}, Lf^{AO0130}

Salicylic acid: Fl^{AO0106}, Lf^{AO0130}, Rt^{AO0102}

Scopoletin: Lf^{AO0130}, Fl^{AO0123}, Rt^{AO0102}, Aer^{AO0108}

Scopoletin, iso: Aer, Rt^{AO0108}
 Scopolin: Aer, Rt^{AO0108}
 Scutellarein, iso, 4-methyl ether 8-O-beta-D-glucoside-2-potassium sulfate: Rt^{AO0102}
 Scyllitol: Lf 800^{AO0140}
 Sinapic acid: Lf, FJ^{AO0123}
 Spiraeoside: Lf, FJ^{AO0124}
 Syringic acid: Lf^{AO0130}, FJ^{AO0106}, Rt^{AO0102}
 Tiliroside: Lf 0.13-0.25%, FJ 0.15-0.19%^{AO0126}
 Umbelliferone: Aer, Rt^{AO0108}
 Valine: Rt^{AO0105}
 Vanillic acid: FJ^{AO0121}, Lf^{AO0130}, Rt^{AO0102}

PHARMACOLOGICAL ACTIVITIES AND CLINICAL TRIALS

Antibacterial activity. Ethanol (95%) and water extracts of the flower, leaf and root, on agar plate, were inactive on *Escherichia coli* and *Staphylococcus aureus*^{AO0100}. Ethanol (95%), hexane and water extracts of the dried seed, at a concentration of 10.0 mg/ml, were inactive on *Corynebacterium diphtheriae*, *Diplococcus pneumoniae*, *Staphylococcus aureus*, *Streptococcus pyogenes* and *Streptococcus viridans*^{AO0127}.

Anticomplement activity. Polysaccharide fractions of the dried leaf and dried root, at a concentration of 500.0 mcg/ml, were active on human serum^{AO0137}.

Antifungal activity. Ethanol (95%), water and hexane extracts of the dried seed, on agar plate at a concentration of 10.0 mg/ml, were inactive on *Microsporum canis*, *Microsporum gypseum*, *Phialophora jeanselmei*, *Piedraia hortae* and *Trichophyton mentagrophytes*^{AO0127}.

Anti-inflammatory activity. Ethanol (80%) extract of the dried root, administered by gastric intubation to male rats at a dose of 100.0 mg/kg, was inactive vs carrageenin-induced pedal edema^{AO0118}.

Antimycobacterial activity. Ethanol (95%) extract of the flower, leaf and root, on agar plate, was inactive on *Mycobacterium tuberculosis*^{AO0100}.

Antitussive activity. Polysaccharide fraction of the dried root, administered intragastrically to cats at a dose of 50 mg/kg, was equivocal, and a dose of 100.0 mg/kg was active vs cough elicited by laryngopharyngeal and tracheobronchial mucosal stimulation^{AO0128}.

Antiviral activity. Ethanol (80%) extract of the freeze-dried entire plant, in cell culture at variable concentrations, was inactive on adenovirus, coxsackie B2 virus, Herpes virus type 1, measles virus, poliovirus 1 and Semlicki-Forest virus vs plaque-inhibition^{AO0132}. Water extract of the dried leaf, in cell culture at a concentration of 10.0%, was inactive on Herpes virus type 2, influenza virus A2(Manheim 57), poliovirus 11 and vaccinia virus^{AO0136}.

Antiyeast activity. Ethanol (95%), water and hexane extracts of the dried seed, on agar plate at a concentration of 10.0 mg/ml, were inactive on *Candida albicans* and *Candida tropicalis*^{AO0127}.

Common cold relief. Hot water extract of the dried seed, taken orally by adults at a dose of 20 gm/person, was active^{AO0142}.

Cytotoxic activity. Water extract of the flower, leaf and root, in cell culture at a concentration of 10%, was inactive on Hela cells^{AO0136}.

Radical scavenging effect. Ethanol/water (1:1) extract of the dried entire plant, at a concentration of 5.0 mcg/ml, produced weak activity vs superoxide anion when estimated by the neotetrazolium method^{AO0112}.

REFERENCES

- AO0100 Gottshall, R. Y., E. H. Lucas, A. Lickfeldt and J. M. Roberts. The occurrence of antibacterial substances active against mycobacterium tuberculosis in seed plants. *J Clin Invest* 1949; 28: 920-923.
- AO0101 Tomoda, M., N. Shimizu, H. Suzuki and T. Takasu. Plant mucii-

- lages, XXVIII. Isolation and characterization of mucilage, "Althaea-mucilage ol", from the leaves of *Althaea officinalis*. **Chem Pharm Bull** 1981; 29(8): 2277–2282.
- AO0102 Gudej, J. Flavonoids, phenolic acids and coumarins from the roots of *Althaea officinalis*. **Planta Med** 1991; 57(3): 284–285.
- AO0103 Gudej, J. Flavonoid compounds of *Althaea officinalis* leaves. 1. Glucoside esters, monoglucosides. **Acta Pol Pharm** 1985; 42(2): 192–198.
- AO0104 Hussey, J. S. Some useful plants of early New England. **Econ Bot** 1974; 28: 311–.
- AO0105 Hahn-Dienstrop, E. Marshmallow root. Identification of marshmallow extract and determination of contents in an instant-tea. **Dtsch Apoth Ztg** 1995; 135(13): 31–33.
- AO0106 Gudej, J. Polyphenolic compounds in *Althaea officinalis* flowers. **Acta Pol Pharm** 1988; 45(4): 340–345.
- AO0107 Yarnelle, E. Botanical medicine for cystitis. **Altern Complement Therap** 1997; 1997: 269–275.
- AO0108 Shome, U., S. Mehrotra and H. P. Sharma. Comparative pharmacognosy of two *Althaea* spp. and 'gulkhairo' samples. **Int J Pharmacog** 1992; 30(1): 47–55.
- AO0109 Komissarenko, S. N. and V. N. Kovalev. Coumarins of *Althaea officinalis* and *A. armenica*. **Chem Nat Comp** 1992; 28(2): 243–244.
- AO0110 De Feo, V. and F. Senatore. Medicinal plants and phytotherapy in the Amalfitan coast, Salerno Province, Campania, Southern Italy. **J Ethnopharmacol** 1993; 39(1): 39–52.
- AO0111 Gudei, J and T. H. Dzido. Quantitative determination of flavonoid glycosides in leaves and flowers from some species of *Althaea* genus using HPLC technique. **Acta Pol Pharm** 1991; 48(3/4): 59–62.
- AO0112 Masaki, H., S. Sakaki, T. Atsumi and H. Sakurai. Active-oxygen scavenging activity of plant extracts. **Biol Pharm Bull** 1995; 18(1): 162–166.
- AO0113 Novaretti, R. and D. Lemordant. Plants in the traditional medicine of the Ubaye valley. **J Ethnopharmacol** 1990; 30(1): 1–34.
- AO0114 Singh, V. Traditional remedies to treat asthma in north west and Trans-Himalayan region in J. and K. States. **Fitoterapia** 1995; 65(6): 507–509.
- AO0115 Kocis, P., A. S. Shashkov, S. V. Yarotsky, R. Toman and P. Capek. 13-CNMR study on the structure of L-arabinans from the roots of the marshmallow (*Althaea officinalis* L.) and from the bark of white willow (*Salix alba* L.). **Bioorg Khim** 1983; 9(2): 240–245.
- AO0116 Capek, P., R. Toman, J. Rosik and A. Kardosova. Biologically active polysaccharides from the roots of *Althaea officinalis*. **Patent Czech-227,759** 1985; 4 pp.
- AO0117 Madaus, A., W. Blaschek and G. Franz. *Althaea radix* mucilage polysaccharides, isolation, characterization and stability. **Pharm Weekbl (Sci Ed)** 1987; 9(4): 139–.
- AO0118 Mascolo, N., G. Autore, F. Capasso, A. Menghini and M. P. Fasulo. Biological screening of Italian medicinal plants for anti-inflammatory activity. **Phytother Res** 1987; 1(1): 28–31.
- AO0119 Capek, P., D. Uhrin, J. Rosik, A. Kardosova, R. Toman and V. Mihalov. Polysaccharides from the roots of the marsh mallow *Althaea officinalis* L., var. rhobusta): Dianhydrides of oligosaccharides of the aldose type. **Carbohydr Res** 1988; 182(1): 160–165.

- AO0120 Gudej, J. Flavonoid compounds of *Althaea officinalis* leaves II. Glycosides of 8-hydroxyluteolin (hypoletin). **Acta Pol Pharm** 1987; 44(3/4): 369–373.
- AO0121 Didry, N., M. Torck and M. Pinakas. Polyphenolic compounds from the flowers of *Althaea officinalis*. **Fitoterapia** 1990; 61(3): 280.
- AO0122 Akhtardzhiev, K. H., M. Koleva, G. Kitanov and S. Ninov. Pharmacognostic study of representatives of *Arum*, *Althaea* and *Hypericum* species. **Farmatsiya (Sofia)** 1984; 34(3): 1–6.
- AO0123 Gudej, J. and M. L. Bieganska. Chromatographic investigation of phenolic acids and coumarins in the leaves and flowers of some species of the genus *Althaea*. **J Liq Chromatogr** 1990; 13(20): 4081–4092.
- AO0124 Gudej, J. and M. L. Bieganska. Chromatographic investigations of flavonoid compounds in the leaves and flowers of some species of the genus *Althaea*. **Chromatographia** 1990; 30(5/6): 333–336.
- AO0125 Dzido, T. H., E. Soczewinski and Gudej, J. Computer-aided optimization of High-Performance Liquid Chromatographic analysis of flavonoids from some species of the genus *Althaea*. **J Chromatogr** 1991; 550 (1/2): 71–76.
- AO0126 Gudej, J. Determination of flavonoids in leaves, flowers, and roots of *Althaea officinalis* L. **Farm Pol** 1990; 46(5/6): 153–155.
- AO0127 Naovi, S. A. H., M. S. Y. Khan and S. B. Vohora. Antibacterial, anti-fungal and anthelmintic investigations on Indian medicinal plants. **Fitoterapia** 1991; 62(3): 221–228.
- AO0128 Nosal'ova, G., A. Strapkova, A. Kardosova, P. Capek, L. Zathurecky and E. Bukovska. Antitussive efficacy of the complex extract and the polysaccharide of marshmallow (*Althaea officinalis* L. var. *robusta*). **Pharmazie** 1992; 47(3): 224–226.
- AO0129 Tomoda, M., S. Kaneko, M. Ebashi and T. Nagakura. Plant mucilages. XVI. Isolation and characterization of a mucous polysaccharide “*Althaea*-mucilage O” from the roots of *Althaea officinalis*. **Chem Pharm Bull** 1977; 25: 1357.
- AO0130 Gudej, J. Polyphenolic compounds in *Althaea officinalis* leaves. **Acta Pol Pharm** 1981; 38: 385.
- AO0131 Kardosova, A., J. Rosik, R. Toman and P. Capek. Glucan isolated from leaves of *Althaea officinalis* L. **Collect Czech Chem Commun** 1983; 48(7): 2082–2087.
- AO0132 Van Den Bergh, D. A., M. Ieven, F. Mertens, A. J. Vlietinck and E. Lammens. Screening of higher plants for biological activities. II. Antiviral activity. **J Nat Prod** 1978; 41: 463–467.
- AO0133 Razzack, H. M. A. The concept of birth control in Unani medical literature. **Unpublished manuscript of the Author** 1980; 64 pp.
- AO0134 Bastien, J. W. Pharmacopeia of Qollahuaya Andeans. **J Ethnopharmacol** 1983; 8(1): 97–111.
- AO0135 Boukef, K., H. R. Souissi and G. Balansard. Contribution of the study on plants used in traditional medicine in Tunisia. **Plant Med Phytother** 1982; 16(4): 260–279.
- AO0136 May, G. and G. Willuhn. Antiviral activity of aqueous extracts from medicinal plants in tissue cultures. **Arzneim-Forsch** 1985; 28(1): 1–7.
- AO0137 Yamada, H., T. Nagai, J. C. Cyong, Y. Otsuka, M. Tomoda, N. Shimizu and K. Shimada.

- Relationship between chemical structure and anti-complementary activity of plant polysaccharides. **Carbohydr Res** 1985; 144(1): 101–111.
- AO0138 Ramirez, V. R., L. J. Mostacero, A. E. Garcia, C. F. Mejia, P. F. Pelaez, C. D. Medina and C. H. Miranda. Vegetables empleados en Medicina Tradicional Norperuana. **Banco Agrario Del Peru and NACL Univ Trujillo, Trujillo, Peru, June** 1988; 54 pp.
- AO0139 Lokar, L. C. and L. Poldini. Herbal remedies in the traditional medicine of the Venezia Giulia region (North East Italy). **J Ethnopharmacol** 1988; 22(3): 231–239.
- AO0140 Plouvier, V. Research on the occurrence of scyllitol in higher plants. **C R Acad Sci Ser D** 275: 2993–2996.
- AO0141 Anon. The herbalist. Hammond Book Company, Hammond Indiana, 1931, 400 pp.
- AO0142 Latif, A. A comparative study on decoction of powdered (Sufoof) and unpowdered (Mussalum) drugs in Unani pharmacy. **Nagarjun** 1983; 27(2): 44–45.