

Acorus calamus L. - ACORACEAE



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Acorus calamus L.

Synonyms: *Calamus aromaticus* Garsault

Local Names

***Acorus calamus*:** **Russian:** Аир болотный (Air bolotniy), Аир обыкновенный (Air obiknovenniy), Аир тростниковый (Air trostnikoviy); **Uzbek:** Игир (Igir); **Kyrgyz:** Каламус Сазы (Kalamus Sazi); **Kazakh:** Каламус Батпақты (Kalamus Batlakti); **Tadjik:** Ботлоқи Каламус (Botloki Kalamus); **English:** Calamus, Flagroot, Myrtle-Flag, Sweet Calamus, Sweet-Flag, Sweetroot.

***Acorus calamus*:** Perennial, rhizome stout (to 3 cm in diameter), creeping, covered with long fiber-roots; leaves narrowly linear, ensiform (1–2 or more cm broad in var. *vulgaris* L. and 5–8 mm in var. *angustatus* Bess.). Stem 60–100 cm tall, grooved on one side and sharp-ribbed on the opposite side, the rib extending into the leaf-like spathe; spadix cylindrical, conical, attenuate at the summit, obtuse, divergent, 4–12 cm long, covered throughout with greenish- yellow perfect flowers; perianth segments hyaline, oblong, somewhat thickened and incurved at the summit.

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Flowering in the second half of May. Shores of rivers, streams, stagnant waters, and marshes. The plant became established in Europe only at the middle of the XVI century. Live rootstocks were first introduced to Prague and Vienna from Constantinople. The seeds do not mature. In addition to natural distribution, it is spread by artificial propagation (Komarov and Shishkin 1935) (Figs. 1, 2, and 3).

Fig. 1 *Acorus calamus*
(Acoraceae), Tashkent
Botanical Garden,
Tashkent, Uzbekistan.
(Photo O.K. Khojimatov)



Fig. 2 *Acorus calamus*
(Acoraceae), Tashkent
Botanical Garden,
Tashkent, Uzbekistan.
(Photo O.K. Khojimatov)



Fig. 3 *Acorus calamus* (Acoraceae), Tashkent Botanical Garden, Tashkent, Uzbekistan. (Photo O.K. Khojimatov)



Phytochemistry

***Acorus calamus*:** Calamus root extract contains 45–65% of vapor volatile components (thanks to which it is known as a flavor), as well as 10–20% of such active phytochemicals as acorenone, acorone, isoacorone, cryptoacorone and beta-azarone (<7% quantitative in the extract). The rhizome of calamus also contains starch, phytocides, essential oil, tannins, resins. In combination, these substances provide its high antiseptic activity – most of the derivatives from the calamus root and the ground part of the plant prevent the reproduction of microorganisms. Thus, a number of flavonoids and phenols in the calamus root act as an inhibitor of the growth of methicillin-resistant *Staphylococcus aureus* (<https://www.proficocosmetics.ru/ingredients/acorus-calamus-sweet-flag-root-extract/>; Sokolov 1994). In samples of rhizomes of Calamus collected in Siberia and Kazakhstan, 3 were found macro- (Na, Ca, Fe) and 25 microelements (Guryev et al. 2003). Calamus rhizomes contain essential oil (up to 4.85%), consisting of pinene (1%), camphene (7%), calamene (10%), camphor (8.7%), acoron, isoacarone, azarone, proazulene, etc. The composition of the rhizomes includes the bitter glycoside acorin, tannins, the alkaloid calamine and ascorbic acid. Calamus grass is rich in starch (up to 20%), contains choline, resins, glycoside lutein (<https://planta-medica.uz/air-obyknovennyj/>).

Local Medicinal Uses

***Acorus calamus*:** The root (rhizome) is used to make medicine. Despite safety concerns, calamus is used for gastrointestinal (GI) problems including ulcers, inflammation of the stomach lining (gastritis), intestinal gas (flatulence), upset stomach

and loss of appetite (anorexia). Calamus is also used as a calming medicine (sedative), to induce sweating, and to treat rheumatoid arthritis and stroke. Some people chew calamus to remove the smell of tobacco, as a stimulant, to increase their sense of well-being, and as a hallucinogen. Some people apply calamus directly to the skin to treat certain skin diseases. In foods, calamus is used as a spice (<https://www.rxlist.com/calamus/supplements.htm>). Calamus root extract perfectly tones the skin, prevents its insemination by pathogenic bacteria and has a refreshing effect, as well as shows an additional anesthetic and anti-inflammatory effect. Calamus root also actively restores metabolic processes in the hair bulb, normalizes cell respiration; eliminates itching, irritation and peeling of the skin, acts as a powerful anti-dandruff agent. Calamus root oil has a similar effect and is often used independently as an anti-inflammatory, antiseptic, antioxidant and antispasmodic agent (<https://www.proficocosmetics.ru/ingredients/acorus-calamus-sweet-flag-root-extract/>). It is a highly valued herb as it acts as a rejuvenator for brain and nervous system. It is a main madhya drug, which has the property of improving the memory power and intellect. Rhizomes of the plant are widely used in the treatment of number of ailments such as epilepsy, mental ailments, chronic diarrhea, dysentery, fever, abdominal tumors, kidney and liver troubles, and rheumatism. *Acorus calamus* leaves, rhizomes and its essential oil possess many biological activities such as antispasmodic, carminative (Sharma et al. 2014). For medicinal purposes, an essential oil, called “flagroot oil” is extracted from dried rootstocks. This oil is also used in the manufacture of soap, toilet creams, etc., but it finds its principal application in the liqueur industry (export). Also employed in cooperage, for sealing fissures between staves of tubs, and for starch production. In the Caucasus the plants are generally used for tanning of hides. Not eaten by livestock. (Sokolov 1994).

Official raw materials included in the domestic pharmacopoeia. In scientific medicine, infusions and powders are appetite stimulants that improve the excretion of bile, which are choleric. In the composition of preparations of vicalin, vicarin peptic ulcer of the stomach and duodenum, hyperacid gastritis, bitter tincture. Infusion approved for the treatment of various forms of inflammatory inflammation, in Bulgaria - as part of the drug neutracid, used in peptic ulcer of the stomach and duodenum, in hypo- and anacid gastritis, regulating the activity of the intestine; infusion, powder - in high acidity of gastric juice with heartburn, epigastric pain in the quality of antacids, in pancreatitis, pielonephritis, glomerulonephritis, nephroric syndrome, exudative chronic pleurisy, bronchiectasis, bronchopulmonary diseases with allergic manifestations, neurocirculatory dystonia in type 5 peritoneum. Gynecological diseases, pathological menopause, during pregnancy, in acute and chronic pharyngitis, for irrigation in periodontitis; ointment for bleeding and atrophic processes in the nasal cavity. In practical and Indian medicine - for bronchial asthma. In Mongolian medicine for pharyngitis, baths for skin disease, especially scabies; in Indian medicine dysentery in children and (including chronic), with intermittent fever, detoxification, poisonous snakes [; in Chinese medicine for hot baths, with paronychia, for respiratory infections; in Tibetan medicine for acute and chronic infections, anthrax; in Korean medicine, the decoction is used for fainting, asthenia, and when collected (intramuscularly) for rheumatoid myocarditis, cardio neurosis, heart valve insufficiency, and dystonia. In folk medicine for grippe, for

kidney stones; internally, externally - to strengthen hair, with alopecia, for cardiovascular diseases, sedative for nervous diseases, epilepsy, hysteria, fainting, neuroses, psychosthenic states with tachycardia; with vomiting, vomiting, improving vision, hearing, memory, with malaria, as an expectorant, analgesic (topically) with sciatica, toothache In Armenia for leukoderma, leprosy, hypertension, epidemic encephalitis, cholera, typhus, diseases of the spleen, jaundice, diuretic pruritus, tumors of the stomach, liver, spleen, rectum, uterus, testicles, impotence, gout, rickets, diathesis, scrofula; externally for dermatomycosis, panaritium, bruises, for varicose veins, urticaria, vitiligo. In toothpastes, powder, cosmetic for strengthening her hair (Sokolov 1994) (Figs. 4 and 5).

Fig. 4 *Acorus calamus* (Acoraceae), Rhizomes. Taylak district, Samarkand region, Uzbekistan. (Photo A.N.Khujanov)



Fig. 5 *Acorus calamus* (Acoraceae), Rhizomes. Taylak district, Samarkand region, Uzbekistan. (Photo A.N.Khujanov)



Folk Recipes

Since antiquity, Calamus rhizome has been used for medicinal baths, in incense, and for tea. The powdered rhizome is used as an insecticide for the destruction of fleas, bedbugs, moths, lice, and so forth. The rhizomes are used in incense sticks. It is effective in killing insect pests in stored rice and is considered to be better than chemicals for this purpose as it shows no residual effect. The root is used as an insecticide and for protection from insect attacks (Mukherjee et al. 2008).

Infusion of rhizomes of Calamus. 10 g (2 tablespoons) of raw materials are placed in enameled dishes and poured 200 ml (1 cup) of hot boiled water, covered with a lid and heated in boiling water (in a water bath) for 15 minutes, then cooled for 45 minutes, filtered, the remaining mass is squeezed out. The resulting infusion is diluted with boiled water to an initial volume of 200 ml. Take in a warm form 1/3 cup 3–4 times a day 30 minutes before meals. Store in a cool place for no more than 2 days (Khojimatov 2021).

Below we have given several recipes for the use of Calamus rhizomes in folk medicine:

With angina, infusions and decoctions from Calamus are prescribed in the form of rinses. It has an expectorant, anti-inflammatory and disinfecting effect. If you chew the rhizome of calamus 5–6 times a day for a small piece, holding it in your mouth for 15–20 minutes, then after 6 months you can get rid of any sore throat. You can prepare various mixtures of angina with the addition of Calamus rhizome and oak bark. Also, the rhizome is useful to chew and for the prevention of angina.

Calamus is an excellent remedy for toothache. A decoction is made from the Calamus root, which they drink or rinse their mouth with it. If a tooth hurts, it is necessary to lubricate the gum with a tincture of calamus and the pain will pass quickly. Calamus penetrates deep into the diseased tooth and has an analgesic effect on the root (<https://planta-medica.uz/air-obyknovennyj/>).

Local Food Uses

***Acorus calamus*:** For aromatization of bakery products, salads, first courses, in the preparation of kvass, cask fish and teas, canned fish, fish products. Powder, alcoholic, ethereal extracts possess insecticidal and repellent properties (Sokolov 1994).

Local Handicraft and Other Uses

***Acorus calamus*:** Fodder for pigs, elk, muskrats, beavers, water rats (Sokolov 1994).

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