



## VALERIANA OFFICINALIS L. – MEDICINAL PROPERTIES OF THE PLANT AND CULTIVATION TECHNOLOGY

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**Abstract:** The article discusses the medicinal value of the plant *Valeriana officinalis* L., gives distribution, stocks of raw materials, chemical composition, general botanical characteristics of the plant, its use in folk medicine.

**Key words:** natural medicinal plants, life forms, fruits, harvesting and quality of raw materials, chemical composition, habitats, distribution medicine.

### **Introduction.**

Medicinal valerian belongs to the Valerianaceae family and is a perennial herb up to 2 m tall. In the first year from the rhizome, the leaves grow before the root ball, and from the second year, the stem grows. The stem grows upright, unbranched or branched at the top. The leaves are simple, divided into 4-11 pairs of lobes with odd pinnae, stem bands (root leaves with long bands), ascending sari band shortens, they are oppositely arranged by leaf bands. Leaf lobes are linear-lanceolate or ovate, with large toothed edges. White or pink, fragrant, small, five-lobed flowers are large. The fruit is an elongated egg-shaped, light brown pistachio. Medicinal valerian blooms in May-August, fruits are produced in June-September[1,2,3].

Distribution and habitat. Valerian officinalis is common in the Andes of South America, in the temperate zone of North America and throughout Eurasia. In Russia, it grows in the European part of the country to the Urals. Occurs in marshy lowlands and upland meadows, along rivers and swamps, in floodplain forests, in grass and peat bogs, among bushes, on steppe slopes, in meadow and forb steppes, occasionally on alkaline depressions; in the mountains rises to the subalpine belt. It is adapted to a variety of ecological conditions, and this ability to settle and exist in various conditions is truly amazing. The plant is introduced into culture. In Russia, it is cultivated in the Central Chernozem and Non-Chernozem zones, Western Siberia and the Far East[2,3,5].



Chemical composition. About 100 individual substances have been found in valerian roots. The roots contain up to 0.5-2% essential oil, the main part of which is bornylizovalerianate (valerian-borneol ester  $C_{15}H_{26}O_2$ ), isovaleric acid ( $C_5H_{10}O_2$ ) in a free state, borneol ( $C_{10}H_{18}O$ ), bicyclic monoterpenes (camphene,  $\alpha$ -pinene, d-terpineol  $C_{15}H_{24}$ , l-limonene), as well as sesquiterpenes, borneol esters of formic, acetic and butyric acids, nitrogen-containing alcohol and kessyl alcohol - proazulene (tricyclic sesquiterpene alcohol), alkaloids, valenotriates (up to 5%; valtrate, acetoxyvaltrate, dihydrovaltrate), actinidin (which has a stimulating effect on cats), valerin, hatinin, tannins, saponins, sugars, organic acids (formic, acetic, malic, stearic, palmitic, etc.), hydroxycinnamic acids (3.5-dicofeylquinic acid, 4.5-dicofeylquinic acid, isoferulic (6%), isochlorogenic (7%), coffee (15%), neochlorogenic (5%), p-coumaric (4%), synapic (8%), ferulic (25%), chlorogenic (30%) %)), glycosides (valeride, valerosides A, B and C), monoterpene alcohol mertinol in free form and in the form of isovaleric acid ester. The aglycone of valerosides A, B and C is valerogenin, which belongs to triterpene ketones, nitrogen-containing alcohol  $C_6H_{13}ON$ , kessyl alcohol  $C_{15}H_{26}O_2$ . (proazulene)[2,3,4,5].

Rhizomes with roots contain up to 2% essential oil, depending on the botanical form and growing conditions. The main component of the essential oil is bornylizovalerianate. In addition, isovaleric acid and borneol, and its esters with other acids, are in the free state. The oil also contains the monoterpene alcohol myrtenol - in its free form and in the form of an ester of isovaleric acid, camphene and  $\alpha$ -pinene, L-limonene and D-terpineol alcohol[4].

Initially, valerian was used as a dry herb and roots for suffocation and as a diuretic. In the Middle Ages - for the prevention of infectious diseases, against epilepsy and as a means of calming the nervous system. Valerian has a multifaceted effect on the body: it depresses the central nervous system, lowers its excitability, reduces spasms of smooth muscles. Experimental studies have established that Valerian officinalis enhances the processes of inhibition in the cerebral cortex, reduces reflex excitability. Essential oil of valerian reduces convulsions caused by the alkaloid brucine, which is similar in pharmacological properties to strychnine. Among the plants used in folk medicine for the treatment of patients with epilepsy, when experimentally tested on various models, valerian turned out to be the most promising[2,3,4,5].

Valerian preparations reduce the excitation caused by caffeine, prolong the action of hypnotics, have an inhibitory effect on the systems of the medulla oblongata and midbrain, and increase the functional mobility of cortical processes. Valerian



regulates the activity of the heart, acting indirectly through the central nervous system and directly on the muscle and conduction system of the heart, improves coronary circulation due to the direct action of borneol on the vessels of the heart. Valerian preparations are used for various indications: as a sedative for chronic functional disorders of the central nervous system, for neurosis, hysteria - a neurotic state characterized by a sharp violation of the relationship between the first and second signal systems (increasing the tone of cortical cells, valerian in this case leads to the establishment of normal relationships specified systems). Valerian preparations are used as a good sedative for insomnia, migraines, excitations due to mental trauma, diseases of the cardiovascular system, accompanied by spasms of the coronary vessels and tachycardia. A beneficial effect of valerian officinalis in diseases of the thyroid gland, asthma, migraine, epilepsy, coronary insufficiency with pain syndromes, and spastic constipation has also been established. Galenic preparations (decoction, infusion, tincture, thick extract) are used as a sedative for nervous excitement, neurosis of the cardiovascular system, spasms of the gastrointestinal tract; are part of sedative collections, camphor-valerian and lily-of-the-valerian drops, Valocormid, Valedrina, Valosedan, Corvalol, Cardiovalena, Valocordin, Validol, Zelenin drops, carminative and gastric collections and collection Zdrenko[3,4]. In medical practice - with chronic functional disorders of the nervous system, hysteria, epilepsy, convulsions, acute excitations due to mental trauma, with mild forms of neurasthenia and psychasthenia, manic-depressive states, migraine, neuralgia, neurodermatitis, with chronic disorders of the coronary circulation; for the treatment and prevention in the early stages of angina pectoris, hypertension, with heart defects; with certain diseases of the liver and biliary tract, diseases of the gastrointestinal tract associated with impaired secretory function, with dysentery and typhoid and paratyphoid diseases; with functional disorders of the endocrine glands, hyperfunction of the thyroid gland, diabetes insipidus, certain types of beriberi, pre- and menopausal disorders; in dentistry - sedative, with the prevalence of the nervous component in the development of periodontal disease, multimorphic exudative erythema, in the complex therapy of diseases of the oral cavity; is part of the tooth drops. It is also used externally - with lichen planus; to cleanse the skin and reduce sweating.

Valerian is used as a sedative for insomnia, a state of nervous excitement, for neuroses of the cardiovascular system, leading to spasms of the coronary arteries and the heart, for neurodermatitis, and also as a general sedative for the heart in the treatment of ordinary neuroses and hyperthyroidism.



Preparations of valerian officinalis reduce the excitability of the central nervous system, increase its functional activity.

Valerian is used to treat chronic functional disorders of the nervous system, epilepsy, hysteria, acute excitations due to mental trauma. It is common in the treatment of mild forms of neurasthenia and psychasthenia, migraine, neuralgia, chronic coronary circulation disorders, manic-depressive states[2,4].

The therapeutic effect of valerian develops slowly, so it is effective for long-term and systematic use. For medicinal purposes, mainly rhizome with roots is used. Collect rhizomes and roots of valerian in the fall, when the fruits ripen, but you can collect them in early spring. As for the cultivation technology of the plant, Medicinal valerian seeds are sown in early spring, while preparing the land and planting the plant should not be delayed. It is sown in the fall, at the end of November, before a steady frost that prevents seed germination. A place free from weeds, flat and well-supplied with water is chosen for planting. Before planting, 30-40 kg/ha of manure and 35-45 kg/ha of granular superphosphate are applied. The main soil tillage (plow) is planted in November (at a depth of 30 cm). There is no need to treat the seeds before planting. 8 kg of seeds are used per hectare. Seeds are sown to a depth of 1-1.5 cm. After the seeds have germinated (after 3-4 leaves have been produced), egates are taken at a distance of 45-60 cm.

The plant is weeded 1-2 times during its growth and development. The land is loosened 4-5 times and watered depending on its condition (April, May, June-July, August-September). The soil is softened after every two irrigations, depending on the type of soil and the degree of weed infestation of the land where the plant grows. In May, 60-70 kg/ha of ammonium nitrate is applied. In the second year, additional spring nutrition is given by loosening the soil in cultivated fields, paying special attention to the loss of flowering stems. This event is carried out with a mowing machine at a height of 10-15 cm above the surface of the plant during full flowering.

Medicinal valerian is harvested in October, the growth of roots continues throughout the fall. Harvesting is carried out on a VK-03 combine or a newly equipped potato harvester and potato digger. Before harvesting in newly equipped harvesters, the above-ground part of the plant is harvested using KIR-1.5 or BM-6 machines. The roots are thoroughly washed in washing machines with drums or flaps, and then they are spread on special racks in rooms where the wind circulates in a thickness of 15-20 cm. Then from time to time raw materials are mixed.

Then all the dried raw materials are collected in a threshing machine, and the cut roots are placed in bags. The yield of dry root of medicinal valerian is 15-20 ts/ha.



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