



CHEMICAL COMPOSITION OF SAMBUCUS NIGRA AND ITS ROLE IN FOLK MEDICINE

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Annotation: This article provides brief information about the chemical composition of *Sambucus nigra* and its importance in folk medicine.

Keywords: *Sambucus nigra*, black elderberry, flowers, fruits, sambunigrin, folk medicine.

Аннотация: В этой статье представлен краткий обзор химического состава Бузина черная (*Sambucus nigra*) и его значения в народной медицине.

Ключевые слова: *Sambucus nigra*, бузина черная, цветы, плоды, самбунигрин, народная медицина.

Sambucus nigra is a shrub or tree 2-6 m high (less often up to 10 m). The stems are branched, have a thin woody shell and a white porous soft core. Young branches are green, then brownish-gray with a large number of yellowish lenticels.

The leaves are opposite, large, 10-30 cm long, imparipinnate, consisting of three to seven oblong-ovate, long-pointed leaflets on very short petioles. The leaves have a broadly wedge-shaped base, unequally serrate along the edges, dark green on the upper side, lighter below.

The flowers are yellowish-white (individual flowers are white), sessile or on peduncles, fragrant, 5-8 mm in diameter, five-petaled, collected in large flat multi-flowered corymbose inflorescences 10-25 cm in diameter, pendulous after flowering. The calyx is five-toothed, the corolla is wheel-shaped, of five yellowish-white petals fused at the base. There are five stamens, attached to the corolla tube. The ovary is semiinferior, trilocular, with a short style and three villous stigmas. Blooms in May - June.

The fruit is a black-violet berry-shaped juicy drupe with a diameter of 5-7 mm, with two to four seeds. Ripe fruits are edible, the taste is sweet and sour. Weight of 1000 "seeds" (seeds) 2.0-4.1 g. The pulp is dark red. Fruits in August - September.

Flowers (Latin: Flores Sambuci) and elderberry fruits are harvested for medicinal purposes. In a well-ventilated and dry room, elderberry raw materials remain suitable for 2-3 years.

Elderberry inflorescences (wild and cultivated) are collected in the full flowering phase in May - June. The collected inflorescences are dried in attics, sheds, and in good weather - in the open air. Then the flowers are separated from the stalks, rubbing the inflorescences through large sieves. Dried flowers have a faint aroma and a sweetish taste.

The fruits are collected in the period of full ripeness, in August - September, dried in dryers or ovens at a temperature of 60-65 ° C, in sunny weather - in the open air. Dry fruits are odorless and have a sour-sweet taste.

Bark, young branches and leaves are used less frequently.



Sambucus nigra flowers and fruits

Chemical composition. Different parts of the plant contain biologically active substances:

- In flowers - glycosides (sambunigrin, which breaks down into hydrocyanic acid, benzaldehyde and glucose [4], and others), semi-solid essential oil (0.27-0.32%, a significant part of which is terpenes), choline, rutin; alkaloids coniine and sanguinarine; carotene; acids: ascorbic (82 mg%[3]), acetic, malic, chlorogenic, caffeic, valeric, etc.; tannins, mucilages, pentosans, resins, mineral salts.

- The fruits contain anthocyanins, ascorbic acid (10-49 mg%), carotene, rutin, sambucin, chrysanthemum, tannins (0.29-0.34%), carboxylic acids and amino acids (tyrosine), sugars, traces of essential oils.

- The seeds contain fatty oil and sambunigrin.

- In leaves: in dry raw materials - sambunigrin (0.11%), resins with laxative properties, a small amount of essential oil. Fresh leaves contain ascorbic acid 200-280 mg%, carotene.

- In the roots - saponins, tannins and bitter substances.

- In the bark - essential oil, choline, triterpene compounds, methyl ester of ursolic acid, betulin, α -amyrin, β -sitosterol, ceryl alcohol, choline, phytosterols, sugars, organic acids, pectin and tannins.

Basic physiological properties of plant parts.

The plant is moderately poisonous to mammals. All parts of the plant are poisonous, with the exception of flowers, the shell and pulp of ripe berries (but including the ripe seeds themselves); toxicity is due to the content of the glycoside sambunigrin $C_{14}H_{17}NO_6$ (CAS No. 99-19-4)), which eliminates hydrogen cyanide, benzaldehyde and glucose during hydrolysis. The bark contains crystals of calcium oxalate.

Unripe berries contain alkaloids, which, if eaten, can cause stomach cramps and disorders.

In medicine. Each component of the bush is useful for the body and is responsible for a certain effect on it. For example, black elderberry berries can be eaten on their own, and decoctions and teas are also made from them. They contain a lot of ascorbic acid, also known as vitamin C, which strengthens the immune system and fights viral inflammation. Black elderberry berries are also used for rheumatism, as a laxative, improve digestion and have an

antibacterial effect. It is worth considering that unripe elderberry fruits should not be consumed, otherwise you may get poisoned.

Elderberry flower tea is used for diseases associated with inflammation of the mucous membrane of the throat and respiratory tract: flu, sore throat, bronchitis, pneumonia and others. Tea helps relieve severe pain and normalize the respiratory process. In addition to flowers, these diseases are also treated with the bark from which the decoction is made. At the same time, a decoction of black elderberry is effective for the treatment of hemorrhoids, arthritis and obesity. It also relieves headaches and toothaches.

In order for tea to become a more effective medicine, it should be drunk at the very beginning of the disease, when malaise first appears. Black elderberry will help avoid long-term illness and kill all bacteria.

In dermatology, for various degrees of skin damage, a decoction of elderberry root heals the surface of the body and at the same time kills bacteria. It is recommended to wipe the disturbing area for wounds, burns, scratches, ulcers and other injuries that require tissue regeneration.

In cosmetology, a decoction of black elderberry is used not only internally, but also externally. Applying a decoction can replace a lotion or tonic, which, in addition to moisturizing, will soothe the skin and relieve irritation.

Black elderberry extract retains moisture in the skin, thereby improving its appearance and inhibiting aging. It is no secret that the environmental situation negatively affects the quality and condition of the skin, so regular care will help preserve it for many years.

In folk medicine, decoctions of Sambucus nigra flowers are taken for kidney disease, rheumatism, gout and inflammation of the joints. Young elderberry leaves boiled in milk are used externally as an anti-inflammatory agent for burns, boils, diaper rash, and inflammation of hemorrhoids. It is also recommended to cover sore joints with a mixture of elderberry and chamomile flowers, taken in equal parts, poured with boiling water (softening mixture). Decoctions of elderberry roots are recommended for diabetes, although there is no convincing data on the effectiveness of such treatment.

Leaves and young (up to 2 years old) branches that have laxative properties are known as traditional medicine. In its medicinal properties, this plant is similar to elderberry (Sambucus ebulus).

Black elderberry was included in the State Pharmacopoeia of the USSR.

In folk cosmetology, black elderberry is also responsible for the beauty of hair. In case of severe hair loss, it is recommended to rub a decoction of flowers or buds into the scalp. After use, hair not only falls out less, but also becomes stronger and softer.

Food use. Black elderberry (Sambucus nigra) berries are sometimes used to make jam, marmalade, and jelly. In England, the inflorescences are traditionally collected in the spring and the drink Elderflower cordial is prepared, which is also produced industrially. Sometimes the berries are boiled along with apples for traditional apple pie.

In Germany, elderflower syrup is used in the production of candies, cold and hot drinks.

In Denmark, in the old days, a tea drink with medicinal properties was prepared from the flowers of black elderberry, described in the fairy tale "Mother Elderberry" by H.C.Andersen.



Young elderberry blossoms are sometimes added to grape must to improve the aroma and taste of wine.

A harmless dye used in the food industry can be obtained from ripe fruits.

Ripe dried fruits are added when pickling some vegetables and when making lightly salted cucumbers.

Used to prepare the traditional Romanian refreshing drink Socata (by fermenting elderberry flowers, sugar, lemon and water).

Homemade natural self-care treatments should be regular. Only in this case can a positive result be achieved.

Benefit. Black elderberry and its beneficial components can restore the balance of nutrients necessary for health. This helps improve both mental and physical well-being, because our mood depends on how we feel and look.

Since each part of the bush plays its role, it is necessary to know what the expected result is. Sometimes, a decoction of the bark can be more effective than a decoction of the leaves, and vice versa. In any case, black elderberry is a source of many healing components and has beneficial health properties.

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