



## **Clover (lat. Trifólium)**

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**Abstract.** The article discusses the main properties of clover and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of the plant are indicated, the use of clover in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of clover on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its use are considered.

**Keywords:** clover, beneficial properties, potentially dangerous effects, side effects, beneficial properties, contraindications, diets

## **Beneficial features**

## **Chemical composition and presence of nutrients**

### **100 g of young clover sprouts contains:**

#### **Main substances:**

Proteins - 3.53 g

Carbohydrates - 3.53 g

Fats - 0.59 g

Kcal - 29

#### **Minerals:**

Calcium - 4 mg

Sodium - 6 mg

Iron - 0.85 mg

#### **Vitamins:**

Vitamin C - 7.1 mg

Vitamin A - 0.04 mg <sup>[6]</sup>

## What exactly is used and in what form

*mountain clover*, *red clover* ) and plant grass ( *creeping clover* ) are most often used as raw materials [2] .

In the treatment of various diseases, infusions and decoctions from clover inflorescences are used. Outwardly, poultices with clover decoction are practiced (for burns, joint problems). Crushed clover leaves are applied to ulcerative skin lesions and festering wounds. Fresh clover juice is used to treat allergic manifestations in the eye area. Clover flowers are brewed and drunk as tea. An alcohol tincture is prepared on the basis of clover [2,7] .

## Medicinal properties

Inflorescences of red clover (meadow) contain glycosides trifolin and isotrifolin, tannins, essential and fatty oils, organic acids, including salicylic acid, carotene, vitamins B1, B2, C, E, K. The antimicrobial component trifolirizin is formed in clover roots. Ascorbic acid and tocopherol are formed in the leaves during the flowering period.

Red clover has an expectorant, diaphoretic, diuretic, anti-inflammatory and antibacterial effect on the body. This remedy is used as an expectorant for inflammatory processes in the upper respiratory tract. Red clover is prescribed for anemia, cystitis, bronchial asthma, painful menstruation and rheumatism "with experience".

Tincture of clover inflorescences is recommended for atherosclerosis (subject to normal and stable blood pressure). With edema of cardiac and renal etymology, the carminative effect of clover is used. A strong decoction of mountain clover is taken on an empty stomach with a hernia. Sitting baths with mountain clover are prescribed for hemorrhoids. Infusion of plowed clover herb is useful for pulmonary tuberculosis, gastritis with high acidity, diseases of the kidneys and bladder, migraine and nervous disorders [2] .

## In official medicine

- The pharmacy assortment offers the drug " *Cleverol* " - a product created on the basis of an extract from red clover. " *Cleverol* " is prescribed in the complex treatment of vegetovascular and emotional and mental disorders that occur against the background of the development of a premenopausal or menopausal state. The tool has a positive effect on insomnia, irritability, hot flashes, characteristic of menopause. How does clover work in menopause? This effect of the drug is explained by the content of phytoestrogens in *Cleverol*, active substances that compensate for the reduced level of estrogen in a woman's body during menopause, or after removal of the ovaries.
- Clover is also present in the system of developed dietary supplements. Dietary supplement " *Red Clover* " is useful and used to strengthen the immune system, with general depletion of the body caused by frequent infectious diseases, as an addition to a balanced menu.
- Alcohol tincture of red clover " *Red Clover* " is also available.
- Flowers and grass of red clover are offered on the drug market in the form of filter bags for brewing.

## In folk medicine

- For coughs and complicated colds, a decoction of clover is useful: pour a tablespoon of inflorescences with 200 ml of boiling water, let it boil, leave for at least two hours in a warm place. Strain and take a third cup three times a day half an hour before meals.
- For anemia, an infusion of clover is recommended: 3 teaspoons of inflorescences are steamed with 200 ml of boiling water. Let it brew for 60 minutes, strain. Take a quarter cup 4 times a day 20 minutes before meals.
- For headache attacks, pour a tablespoon of inflorescences with boiling water, leave for half an hour and squeeze. Take 100 ml three times a day for 14 days.
- With dysmenorrhea, steam two tablespoons of clover in 200 ml of boiling water, let it brew in a thermos for half a day. Strain, drink 50 ml 4 times a day half an hour before meals.
- For cystitis: pour a tablespoon of inflorescences into 0.5 liters of water. Bring to a boil. Drink 2 tablespoons with an interval of two hours <sup>[5]</sup>.
- With atherosclerosis, accompanied by headache and tinnitus (under the condition of normal blood pressure), clover tincture is useful: 40 g of dry raw materials are infused in 0.5 liters of alcohol with a strength of 40 degrees for 10 days. Strained tincture drink 20 ml before lunch and in the evening, before going to bed. Duration of treatment 90 days, with a break of 10 days <sup>[3]</sup>.
- To improve digestion, prepare a mixture of red clover inflorescences, peppermint leaves and centaury grass (all herbs in a tablespoon). Raw materials pour 300 ml of boiling water, let it brew and take 100 ml three times a day for half an hour before meals.

### **Externally:**

- To prepare lotions and poultices, use a decoction of clover inflorescences (20 g of flowers per cup of boiling water).
- In case of rheumatism, three tablespoons of plowed clover grass are wrapped in gauze and dipped in boiling water, then squeezed out, and, not scalding hot, are applied to the affected area of the body <sup>[2]</sup>.

### **in oriental medicine**

Tibetan healers use lupine clover in the treatment of diseases of the liver and biliary tract, with jaundice.

Avicenna prescribed fresh clover grass juice in the treatment of bronchial asthma. A decoction of clover was recommended for healing wounds and ulcers in scrofula, and used it as a diuretic in kidney pathologies.

In Central Asian countries, clover decoction is used to treat colds, malarial fever, and is used for weakened and reduced digestive functions as an astringent <sup>[7]</sup>.

### **In scientific research**

P.B. Clifton-Bly, R. Beiber, J. Fulker, M. Neri, T. Moreton studied the effect of isoflavones contained in red clover on lipid metabolism and metabolic processes in bone tissue <sup>[8]</sup>.

Nestel P. J., Poumroy T., Kay S. note the effect of isoflavones isolated from red clover associated with changes (improvement) in the walls of blood vessels in menopausal women <sup>[9]</sup>.

The pharmacokinetic aspect of red clover is highlighted in the work of Howes J., Waring M., Huang L., who analyze the rate of absorption of isoflavones in the body <sup>[10]</sup>.

The use of red clover as a remedy for postmenopausal women was studied by S. Eksanpour, M. S. Salehi, B. Solfagari <sup>[11]</sup>.

Wong I., V. Man Guo, S. Chen also determined the role of substances contained in red clover in the appointment of estrogen replacement therapy <sup>[12]</sup>.

Novikova O., Pisareva D., Zhuravel M. <sup>[13]</sup>

### In cooking

All parts of the plant are suitable for culinary experiments: **clover sprouts** are eaten fresh, or lightly boiled in salted water, the **flowers** are used raw, dried, for preparing various desserts and drinks. **Both seeds and flowers** can be ground into flour.

- clover tea

Ingredients you will need to prepare a fragrant and healthy drink: one cup of clover flowers, two tablespoons of dried or fresh mint, four cups of water, honey or sugar to taste. Rinse the clover flowers thoroughly under running water. Steam mint and clover in boiling water. Insist 10 minutes. Then strain and add honey or sugar <sup>[14]</sup>.

- Clover Cookie

To make these cookies, you will need: 2 cups wheat flour, 1/2 cup almond flour, 1 tablespoon baking powder, 1/3 cup room temperature butter, 2 eggs, 1/2 cup plain yogurt, vanillin on the tip of a knife, 1 cup chopped dry or fresh flowers. clover. Combine flour, baking powder and butter and mix until smooth. Separately beat eggs with yogurt and vanilla. Add clover flowers to the egg mixture and gradually introduce the resulting mass into the dough base of flour, butter and baking powder. Roll out the kneaded dough on a floured surface. Cut out cookies with cookie cutters. Bake until golden brown. Serve the finished cookies with jam or hot chocolate <sup>[15]</sup>.

- Mousse with white clover

To create this delicious dessert you will need: 2 cups of white clover inflorescences sorted into flowers, one tablespoon of gelatin (or one sheet of gelatin), a cup of water, half a cup of freshly squeezed orange juice, 4 tablespoons of honey, a cup of whipped cream, a pinch of salt.

Dissolve gelatin in a quarter cup of water. In a saucepan over low heat, gradually bring the mixture of clover flowers, water, orange juice, honey and salt to a boil. Remove from heat, add gelatin, stirring until completely dissolved and allow to cool. Leave in the refrigerator until it starts to harden. Beat a cup of cream and gently mix with a slightly seized jelly mass. Transfer to a glass bowl and refrigerate until the mousse is completely set <sup>[16]</sup>.

### In cosmetology

Does clover help with wrinkles? Care cosmetics based on clover extract covers products intended for mature, aged skin with pronounced signs of aging. The active components released from clover are

characterized not only by a rejuvenating effect. They effectively heal the skin affected by acne, soothe sensitive and irritated skin. Clover is also useful for hair: clover extract is part of the means that prevent hair loss <sup>[17]</sup>.

### Other uses

Clover is a highly productive honey plant. Fresh clover honey is transparent, with a delicate smell; during crystallization, the honey clover mass turns white and hardens.

Clover is used by farmers as a plant that improves soil composition. The plant not only positively affects the structure of the soil, strengthens it, but also leads to an increase in the number of earthworms and various beneficial microorganisms that inhabit the land. The clover root system contains specific bacteria whose function is the accumulation of nitrogen. As a result, the soils on which clover grows are always enriched with this mineral fertilizer. This feature of clover is actively used by agronomists when sowing fields.

### Dangerous properties of clover and contraindications

Clover is contraindicated during pregnancy, lactation. Clover is not recommended for those who are taking any hormone therapy (the isoflavonoids contained in it create an additional hormonal load in this case). Given that clover is a source of phytoestrogens, you should refrain from using any drugs based on clover when taking oral contraceptives, estrogens, progesterone drugs, anticoagulants, aspirin.

With uncontrolled and excessive use of clover, the following side effects may occur: headache, muscle weakness, nausea, allergic reactions.

It is dangerous to take clover at the same time as any blood-thinning drugs in order to avoid damage to the liver and the occurrence of internal bleeding <sup>[19]</sup>.

### Botanical description

This is a member of the legume family.

### origin of name

Among the many folk names-analogues of the plant: *redhead*, *red porridge*, *honey color*, *meadow shamrock*, *trinity*, *scrofulous grass*, *fever grass*, *trojan*. The Latin generic name for clover **Trifolium** translates to " *shamrock* ".

### Kinds

Botanists know 244 species of clover, including:

1. **Red clover (red)** - grows almost everywhere in Europe, in the Far East, Kamchatka, in the Siberian region, in northern Africa, in Central Asian countries. Widely used in traditional medicine recipes, in homeopathy, in the culinary tradition, the species has justified itself as a popular food culture. Forage pasture plant and productive honey plant.
2. **Mountain clover** is a perennial, a representative of the mountain flora of Europe, the Asian part of Russia, and some Asian countries. For the preparation of medicines, grass and

inflorescences of this species are used. Mountain clover extract has found active use in the creation of cosmetics.

3. **White clover (creeping)** - the habitat of this perennial is unusually wide: Europe, the Caucasus region, Siberia, northern Africa, Asian countries, the American continent, Australia and New Zealand. Popular fodder crop. White clover is used in medicine and is an excellent honey plant.
4. **Plowed clover** is an annual plant common in the European region, on the territory of Western Siberia. Has medicinal value.
5. **Alpine clover** - grows on ledges and in rock crevices, is found on rubble and in river valleys. Distributed in the Alps, the mountainous Crimea, the Caucasus and Altai. <sup>[1,2]</sup>.

*Red clover (meadow)* is a herbaceous plant with a height of 15 to 40 (sometimes 60) cm, with a woody rhizome, ascending stems and trifoliate leaves characteristic of all clover. The flowers are dark pink, dirty purple, ash pink, red-purple or white, collected in rounded heads. Fruit type - bean. The flowering period of clover is from May-June to September. You can meet the plant on forest edges, along the road, on slopes, glades, meadows with soils of medium moisture and among shrubs <sup>[3]</sup>.

### Growing conditions

Clover is a typical representative of temperate crops. The plant prefers moist soils, drought affects clover negatively. During the growing season, clover is best suited for cooler temperatures. Germination of seed material occurs at a positive temperature of 2 degrees. The emerging plant is able to adapt to light frosts. Clover also tolerates wintering with severe frosts well, provided there is a dense snow cover. The preferred time for sowing clover is early spring. Before sowing, the soil is treated to eliminate possible pests and fed with micronutrient fertilizers <sup>[4]</sup>.

The collection of clover inflorescences should be started in dry and sunny weather. When harvesting, the inflorescences-heads are cut off along with the apical leaves. Clover is preliminarily dried in the sun, then dried in a room with good ventilation. When drying, the inflorescences should not be vigorously shaken to prevent mass scattering of raw materials into small flowers. It is necessary to store clover in a dry place, because at a certain level of humidity in the inflorescences, enzymatic processes are launched that spoil the medicinal properties of the plant and even contribute to the formation of toxic and harmful substances. The shelf life of clover is up to 2 years. At home, small armfuls or bunches of clover are wrapped in thick paper and kept hanging <sup>[3]</sup>.

If fresh clover inflorescences are used, it must be remembered that between the flowers of each plant there may be a significant number of insects attracted by the aroma and nectar of clover. To clean clover from insects, you need to soak the inflorescences in salted water for about a quarter of an hour. Salt water at the rate of: a teaspoon of salt per liter of liquid. Then the inflorescences should be washed under running water <sup>[5]</sup>.

### Power circuit

Clover is an important **source of protein food** for animals. Numerous species of clover are grown as fodder pasture crops intended for cattle and small cattle. The fodder value of clover is very high: the plant is used for fortification of feed for farm animals, for grazing, for the preparation of hay flour, silage and hay.

### Literature

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### **Clover - useful properties, composition and contraindications**

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