



## Calendula (Marigolds, lat. *Caléndula* )

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**Abstract.** The article discusses the main properties of calendula 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 calendula in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of calendula on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its application are considered.

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

### Useful properties of *calendula officinalis*

Table 1. Chemical composition of calendula (according to [Food+](#) ).

| trace elements           | mg/kg dry weight <sup>[4]</sup> |
|--------------------------|---------------------------------|
| Iron                     | 533                             |
| Manganese                | 85.9                            |
| Zinc                     | 49.9                            |
| Copper                   | 15.51                           |
| Nickel                   | 5.68                            |
| Chromium                 | 4.75                            |
| cobalt, lead and cadmium | less than 0.1                   |

### What exactly is used and in what form

Medicinal value are marigold flower petals, whole flower inflorescences, and leafy flowering tops. Infusion, tincture, tea, decoctions are prepared from calendula inflorescences. The extract of medicinal marigold is included in the composition of tablets, ointments, lotions. Externally, calendula tincture is used as a lotion, for lubrication and healing of cuts, burns, ulcers and wounds; for douching, rinsing. Marigolds are present in numerous herbal preparations. Calendula is also widely used in homeopathy.

## Medicinal properties

*Calendula officinalis* petals contain volatile oils, flavonoids ( heterosides isorhamnetin ), carotenoids (carotene, violaxanthin , rubixanthin , flavoxanthin , lycopene ), calendine bitterness , triterpene saponins - calendulosides ( faradiol , arnidiol and oleanolic acid glycosides), sesquiterpene calendene , resins, mucus, tannins, organic acids, phenol derivatives, antibiotic, sitosterol . <sup>[5]</sup>

*Calendula officinalis* has anti-inflammatory, bactericidal, wound healing, antispasmodic, hypotensive, cardiogenic and sedative properties; contributes to the acceleration of the metabolic function of the liver (secretory and excretory functions increase, the concentration of bilirubin and cholesterol in bile decreases). A diluted tincture of medicinal marigolds is used to treat leg ulcers, pityriasis versicolor and oily seborrhea of the face, eczema, purulent skin rashes and frostbite, aphthous stomatitis (in the form of rinses), gingivitis, pyorrhea, periodontal disease, tonsillitis and tonsillitis. With erosion of the cervix and trichomonas colpitis prescribe douching, make baths and microclysters for proctitis, paraproctitis, anal fissures. With blepharitis and conjunctivitis, compresses and eye baths are useful. The use of calendula gives a positive therapeutic effect in gastritis, gastric ulcer and duodenal ulcer, colitis, enterocolitis, diseases of the liver and biliary tract (especially in combination with chamomile officinalis and common yarrow). The use of calendula is justified in cardiovascular diseases, accompanied by an accelerated heartbeat, shortness of breath and edema. In gynecological and obstetric practice, an infusion or tincture of calendula is prescribed orally for incessant vomiting in pregnant women, dysmenorrhea, high blood pressure and insomnia in menopause. In folk medicine, medicinal marigolds are used for aphthosis , bronchitis, scrofula, rickets, jaundice, diseases of the bladder and spleen, nervous fever and dizziness. <sup>[6]</sup>

In herbal medicine, calendula in the form of a suspension or tincture is used externally to treat acne , reduce inflammation and soothe irritated skin. Some sources indicate the effective use of calendula ointment or cream in the treatment of radiation dermatitis (skin damage due to radiation exposure). Calendula ointment with radiation dermatitis significantly reduces the pain of the victim. <sup>[16]</sup>

## In official medicine

Preparations based on *calendula officinalis*:

- **Tincture of calendula** ;
- **KN tablets** (composed of calendula flower powder and nicotinic acid). Assign to reduce the effects of dyspepsia in oncological diseases of the esophagus, stomach, intestines. Symptomatically, together with nicotinic acid, calendula has a beneficial effect on malignant tumors of the stomach, which are not subject to surgery;
- **Caleflon** (purified extract of *calendula officinalis* flowers in the form of tablets) - used for stomach ulcers, duodenal ulcers, chronic gastritis in the acute phase to eliminate inflammation and accelerate healing;
- **Caferide** (as part of the preparation of iron oxide and marigold flowers). It is prescribed for anemia as a means of stimulating the processes of hematopoiesis. <sup>[5]</sup>

## In folk medicine

- With inflammation of the mucous membrane of the digestive tract, half a tablespoon of calendula petals is poured with a glass of boiling water. Let it brew and take a tablespoon every 60 minutes. <sup>[5]</sup>
- With scrofula, rickets and swelling of the spleen, drink 2 glasses a day of tea from marigold flowers and yarrow herb, taken in equal parts.

- For diseases of the liver and biliary tract, take a tablespoon of herbal mixture of St. raw water, insist night, boil for 7 minutes in the morning, insist 20 minutes and take 3 glasses a day.
- With painful menstruation, a tablespoon of a mixture of calendula flowers and mallow flowers (mallow forest) in proportions of 6: 4 per glass of boiling water, insist 20 minutes and take 3 glasses a day.
- With furunculosis, they drink tea from a mixture of marigold flowers, burdock roots, walnut leaves and creeping wheatgrass root (4; 2.5: 1.5: 2). A tablespoon of this mixture is poured with a glass of boiling water, let it brew for a quarter of an hour and take 0.5 cups three times a day. <sup>[7]</sup>
- In case of hypertension, in order to reduce and stabilize blood pressure, a long-term collection is recommended: 9 tablespoons of marigold flowers, pour 0.2 liters of vodka and leave for 10 days in a glass container, in a dark and cool place, shaking from time to time. After that, strain, take 20 drops three times a day with water.
- With angina pectoris, atherosclerosis, hypertension, pain in the heart and neurotic conditions, a collection is useful: a tablespoon of valerian root and dill seeds and 2 tablespoons of licorice root, string grass and calendula flowers. Pour a spoonful of the mixture of all the ingredients with 200 ml of boiling water, boil for half an hour in a water bath, let it brew, strain it chilled. Add boiled water, increasing the volume to 0.2 liters. Drink a third of a glass three times a day for three weeks, then take a break and continue the course for another 2 weeks. <sup>[eight]</sup>
- Powder from calendula flowers is considered a good anti-inflammatory and bactericidal agent: you need to take it three times a day, 0.3 - 0.5 g, washed down with water, or with honey.
- For neuroses, as a sedative: take 2 tablespoons of calendula inflorescences and oregano herbs, a tablespoon of tansy flowers. Mix, pour a tablespoon of the herbal mixture with 200 ml of boiling water, and heat under the lid in a water bath for a quarter of an hour. Then cool and strain. Drink a quarter cup 4 times a day for 3 weeks.
- Calendula tincture at home: to prepare the tincture, you need 40% alcohol . Grind two tablespoons of fresh medicinal marigold inflorescences and pour into a glass dish. Pour the flower mixture with 100 ml of alcohol. Close the container, leave in a dark place for 8 days. Then strain and store in a cold place. <sup>[9]</sup>

### Externally:

- For cuts, acne, boils, frostbite, ulcers, lichen, blepharitis, apply marigold steam to the affected area . For rinsing the cavity and throat with tonsillitis, gingivitis, stomatitis, amphotodontosis, take one teaspoon of alcohol tincture of calendula in half a cup of boiled water.
- Freckles on the face and hands are removed with a two-time lubrication of juice from calendula leaves, mixed in equal parts with lemon juice, currant berries and almond oil. <sup>[7]</sup>
- If vision falls, lotions from such a mixture are applied to the eyes at night: calendula flowers, blue cornflower petals and flowering eyebright herbs are taken in equal parts. The course of treatment is long, at least six months.
- For douching with cervical erosion, with trichomonas lesions, pathological discharge, prepare an infusion of 4 tablespoons of calendula per liter of boiling water. <sup>[ten]</sup>
- For pain in the joints, rub a few drops of calendula tincture with massage movements into the affected area, then wrap it with a warm scarf or scarf. This treatment should be followed for a week, daily at bedtime. Also, a compress can be applied to the joint: moisten the cloth in tincture, “warm” the finished compress, withstand at least 3 hours. Repeat the procedure daily. <sup>[9]</sup>

### in oriental medicine

Indian healers have long used calendula as an antiseptic and stimulant.

The properties of calendula were studied by Avicenna, who highly appreciated the medicinal value of the plant.

Calendula is used in Ayurvedic medicine.

### In scientific research

- The medicinal properties of calendula remain the object of modern scientific research.
- J. M. Leach studied the healing abilities of calendula officinalis, its significance in therapy aimed at treating wounds of various etymologies. <sup>[eleven]</sup>
- Phytochemical and ethnopharmacological aspects of representatives of the genus Calendula are covered in the work of D. Arora , A. Rani and A. Sharma. <sup>[12]</sup>
- M. Butnariu and K. Z. Koradini studied the bioactive components of the flowers of calendula officinalis. <sup>[13]</sup>
- Scientific work of Sharova O.V. and Kurkina V.A. dedicated to flavonoids contained in marigold flowers. <sup>[fourteen]</sup>
- The diuretic effect of drugs based on calendula flowers was analyzed in the work of Kurkin V.A., Kurkina A.V., Zaitseva E.N. and others <sup>[15]</sup>
- P. Pomier , F. Gomez and others substantiated in a scientific study the role of calendula in the prevention of radiation dermatitis during irradiation used in the treatment of breast cancer. <sup>[16]</sup>

### In cooking

Calendula petals as a natural dye, flavoring agent and flavoring agent are used in the preparation of salads, desserts, drinks, and a variety of vegetarian dishes. Calendula is added to soups, pastries, herbal tinctures, homemade liquors, sauces.

- Rice with calendula

Ingredients you will need: 4 cups water, 1/8 teaspoon salt, half a finely chopped onion, 2 bouillon cubes, half a cup of crushed marigold petals, 2 cups long grain rice. Boil water, add salt, onion, bouillon cubes, marigold petals and rice to boiling water. Stir and cook covered over low heat for 18 minutes.

- Muffins with calendula

You will need: 1 and 3/4 cups flour, 2 teaspoons baking powder, 0.5 teaspoon salt, 1/4 cup sugar, 2 eggs, 2 tablespoons melted butter, 3/4 cup milk, 3/4 cup crushed dates, 2 tablespoons marigold petals. Preheat the oven to 220 0. Mix the sifted flour with baking powder, salt and sugar. Beat eggs separately. Combine the egg mixture with milk, butter, dates and calendula petals. Mix all ingredients thoroughly. Pour the batter into the cupcake molds, filling them halfway. Bake for 15-20 minutes. Garnish the finished muffins with calendula flowers and petals.

- Omelet with calendula

To prepare an omelette you will need: 2-3 eggs, 2 tablespoons of milk, a teaspoon of butter or a tablespoon of any vegetable oil, 2 tablespoons of fresh calendula petals, salt and pepper. Beat eggs with milk, salt and pepper to taste. Pour the calendula petals into the egg-milk mixture. Prepare an omelette in a preheated frying pan, greased with oil and sprinkle the finished dish with marigold petals.

- Custard with calendula

It will take 0.5 liters of milk, a cup of marigold petals, a quarter teaspoon of salt, 3 tablespoons of sugar, vanilla on the tip of a knife, 3 egg yolks, 1/8 teaspoon of grated nutmeg and the same amount of allspice, 1/2 teaspoon of rose water. Grind the calendula petals in a mortar and mix with milk and vanilla. Add beaten egg yolks, salt and sugar with spices (nutmeg and allspice) to the milk mixture. Bring to a boil over medium heat, stirring constantly. Stirring constantly, boil for 5-10 minutes until thickened. Add rose water to the chilled cream. Ready-made custard can be used for making desserts or served as a separate dish, baked. Serve the baked custard with whipped cream and calendula petals.

- Herbal oil with calendula and marjoram

Required products: 200 g butter, 2-3 tablespoons of marigold petals and the same amount of marjoram leaves. Mix the softened butter with calendula and marjoram and bring the mixture to a homogeneous state in a blender. You can add a tablespoon of olive oil, a little lemon juice, salt and pepper to taste. Put the finished butter into a mold or butter dish and freeze in the refrigerator.

- Cornbread with calendula petals

Ingredients: 2 cups whey, 3-4 tablespoons fresh marigold petals, 1.5 cups cornmeal, 3/4 cup wheat flour, 3/4 cup unbleached flour, 1.5 teaspoons baking powder, 3/4 teaspoon salt, 2 large eggs, 1/4 a cup of vegetable oil or melted butter, 1/4 cup of honey.

Soak calendula petals in whey. Preheat the oven to 190. Lubricate the baking dish with oil. Sift corn flour, wheat flour, unbleached flour, baking powder and salt into a large bowl. Beat eggs, add whey, vegetable or melted butter and honey, beat all liquid ingredients for at least a minute. Mix the egg-butter mixture on the whey with the prepared flour. Pour the dough into the mold, bake the bread for 25-30 minutes, until golden brown. Cut and serve when completely cool. <sup>[17]</sup>

Calendula can be salted and pickled and used as a dressing for salads, soups, main dishes.

To pickle calendula, you will need: 1 kg of fresh flower baskets of medicinal marigolds, 0.5 liters of water and 60 g of salt. Boil the water, salt, pour the calendula flowers washed and dried from moisture with boiling brine, cook for 5 minutes. Allow to cool, pour into a glass dish with brine, store in a cool place.

For calendula in marinade, you will need: 1 kg of fresh calendula inflorescences, 0.5 l of 3% vinegar, 40 g of salt and a few black peppercorns. Pour the prepared inflorescences with vinegar, add salt and pepper, and cook for 5 minutes. Pour chilled into storage containers. Store in a dark place.

- Calendula drink with apple juice

A glass of dry marigold inflorescences pour 2 liters of water and boil over low heat for at least 0.5 hours. Leave the decoction for about 8 hours. Then add 400 ml of fresh apple juice and 200 ml of liquid honey to the calendula decoction. Pour the drink into bottles, leave in a cool place. <sup>[9]</sup>

## In cosmetology

Calendula is an invariable component of many skincare products. Based on it, tonics, creams, scrubs, rinses, masks, herbal cosmetic ice and soap are created.

- Softening hand mask with calendula

To prepare such a cosmetic product, you will need: 2 tablespoons of oatmeal, 2 teaspoons of lemon juice, 1 teaspoon of fresh marigold petals, a tablespoon of honey, 3 tablespoons of warm water. Mix all ingredients and puree in a blender. Apply to cleansed and slightly damp skin. Withstand 5-10 minutes. Rinse off the mask with room temperature water and lubricate your hands with a nourishing cream. Oatmeal cleanses and softens the skin, lemon juice evens out skin tone and eliminates age spots, calendula and honey soften and heal.

- Hair rinse with calendula

You will need: 0.5 liters of strong herbal calendula tea, a tablespoon of calendula tincture, 3-5 drops of rosemary essential oil. Brew strong tea from calendula flowers. Let stand and cool. Add calendula tincture and rosemary essential oil. Apply to washed and damp hair and scalp. Leave on for a few minutes, then rinse.

- Facial scrub

Ingredients: a cup of oatmeal, half a cup of cornmeal, 1/3 cup of dry marigold petals. Grind all products in a coffee grinder into powder. Store this scrub base in a container with a tight-fitting lid. Before cleansing the face, mix one teaspoon of the dry mixture with a little water. Apply to a damp face and rub into the skin with massaging movements. Wash off with warm water.

- Balm with calendula

It is useful to lubricate scratches, burns, abrasions, bruises with such a balm. For preparation, you need to take 105 g of an oil extract of medicinal marigolds and 150 g of beeswax. Melt the wax in a water bath and combine with calendula extract. Warm up and pour into a small glass container. Store the frozen balm in a dark, dry place.

- Steam bath for the face

Take half a cup of dry marigold petals, lavender flowers, roses and chamomile. Prepare an infusion by pouring about half a cup of such a flower mixture with a liter of boiling water. Steam the skin of the face over the herbal bath for 3 to 7 minutes.

- Bath with calendula

Based on a full bath, prepare an infusion: pour a full cup of dry calendula petals with 2 liters of boiling water. Bring to a boil and let it brew. Add to bath water. This procedure is useful for eczema, hives, rashes. <sup>[17]</sup>

Calendula helps with problem skin. To make an acne lotion at home, you will need: mix a tablespoon of calendula infusion with a tablespoon of camphor alcohol, adding 10 drops of ammonia, mix everything thoroughly and store in the refrigerator. Apply the lotion on the face with rubbing movements, with a cotton pad dipped in the solution, up to 3 times a day. <sup>[19]</sup>

## In perfumery

Calendula essence is traditionally used in perfumery. The plant brings bitterness, spice, balsamic note to compositions. Perfume with a well-tangible aroma of marigold – *Interlude Woman by Amouage*.

## Other uses

- The juice of fresh marigold leaves is used to treat bee stings. Marigold flower juice is used as a natural dye in the production of cheese and butter. Previously, marigold dyes were also used to color Easter eggs, added to chicken feed to make the egg yolk brighter.
- Thickets of calendula prevent the reproduction of roundworms (nematodes) in the soil.
- Marigolds are considered a natural repellent: marigold bushes planted under the windows of the dwelling repel mosquitoes. Also, the aroma of calendula repels insect pests from beds with potatoes, tomatoes and eggplants.

### **Dangerous properties of calendula and contraindications**

Calendula lowers blood pressure, so hypotension patients should be especially careful with it.

Also, preparations based on calendula can cause an allergic reaction in people with intolerance or predisposition to allergic diseases. During pregnancy and lactation, the advisability of using calendula should be strictly agreed with your doctor. /p>

Since calendula itself has a calming effect on the nervous system (it is used in the treatment of neurosis), the simultaneous use of sedatives and calendula-based drugs is contraindicated: increased drowsiness and lethargy may occur. <sup>[ten]</sup>

### **Botanical description**

It is an annual herbaceous plant of the Compositae (Asteraceae) family.

### **origin of name**

*marigold* " is firmly entrenched in the calendula . Other name variations: *solstice*, *oil color*, *golden color* . The Latin word *Calendula* is a diminutive of "little calendar," "little clock," and even "little barometer," as calendula flowers close and bloom at certain times of the day, the so-called "flower clock."

### **Kinds**

In botany, from 12 to 20 types of calendula are distinguished, among which:

1. **Calendula officinalis** ( *Calendula officinalis* ) - grows in the temperate climate zone of Europe, the Australian continent and Asia. Cultivated as a medicinal plant on an industrial scale. Used in the food industry. Within this species, many varieties have been bred. It also has a decorative value;
2. **Field calendula** ( *Calendula arvensis* ) is an endemic plant of central and southern Europe. Is a source of medicinal raw materials;
3. **Sea calendula** ( *Calendula maritima* ) - found in the western part of Sicily, grows along the coast. The species is classified as endangered. Sea calendula is the national symbol of the Italian province of Trapani . <sup>[one]</sup>

*Calendula officinalis* is an annual herb, from 0.3 to 0.5 m high. The root system is taproot, the stem is straight, branched, with longitudinal ribs, densely pubescent with small and hard villi. The leaf arrangement is alternate (spiral), the lower leaves are larger, petiolate, the upper ones are smaller, sessile. Bright yellow or orange flowers with a balsamic aroma are collected in baskets. Reed flowers grow along the edge of the inflorescence, tubular flowers in the middle. The fruit is a seed. Marigolds bloom from June to mid-autumn. Achenes ripen from July. It is grown in horticultural farms, in household plots, it is very rarely found as a weed. <sup>[2]</sup>

## Growing conditions

Calendula takes root on any soil, but the highest yield can be obtained with high humidity and in well-lit areas. It is possible to use the area where calendula is grown for many years. On the eve of sowing, the soil is plowed to a depth of 0.2 m. Seeds are sown in early spring. On the beds with the formed seedlings, weeding is carried out and the soil is loosened. Weeding and plowing the soil is repeated 2-3 more times at the beginning of the summer period. It is also advisable to fertilize the soil with fertilizers (up to 2 times). <sup>[3]</sup>

Watering is moderate. Too densely sown calendula can be affected by powdery mildew. Calendula is frost tolerant. In addition to spring sowing, it is possible to sow seeds before winter. Marigolds sprout well from self-seeding. The plant blooms about a month after seed germination. <sup>[eight]</sup>

The collection of inflorescences-baskets is carried out from 8 to 12 times during the entire growing season, since the flowering period of calendula lasts quite a long time. Harvest raw materials in the phase of mass flowering. Those inflorescences are plucked in which the tubular flowers are partially opened, and the reed ones are located horizontally. A part of the peduncle up to 3 cm long may remain at the basket. Calendula is harvested until frost, as it blooms at intervals of 2 to 5 days. After the fourth or fifth harvest, the inflorescences become much smaller. Dry the nails immediately, in the shade, under a canopy, scattering a thin layer on a tarpaulin or burlap and shaking from time to time. The readiness of raw materials is determined by the degree of friability of the inflorescences into pieces. Permissible shelf life is 1 year. <sup>[2]</sup>

## Power circuit

The plant serves as food for butterfly larvae, representatives of several common species. Among them are cabbage scoop, currant scoop, large yellow tapeworm, etc.

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

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