



Radish (lat. radix)

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

Keywords: radish, benefit, harm, beneficial properties, contraindications

Beneficial features

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

Main substances (g/100 g):	Fresh radish [1]	Canned radish [2]
Water	95.27	91.50
Carbohydrates	3.4	5.2
Sugar	1.86	2
Alimentary fiber	1.6	2.2
Squirrels	0.68	1.1
Fats	0.10	0.30
Calories (kcal)	16	28
Minerals (mg/100 g):		
Potassium	233	333
Sodium	39	789
Phosphorus	twenty	31
Calcium	25	28
Magnesium	ten	eight
Iron	0.34	0.23
Zinc	0.28	0.22

Vitamins (mg/100 g):		
Vitamin C	14.8	0.0
Vitamin PP	0.254	0.310
Vitamin B6	0.071	0.100
Vitamin B2	0.039	0.030
Vitamin B1	0.012	0.020

Radish refers to low-calorie foods and is not replete with useful substances. But even without being a vitamin-mineral bomb, it still contains a considerable amount of minerals and vitamins. If we talk about how to use it, then it is best to eat the root vegetable fresh. During canning, radishes lose some vitamins and receive an excess amount of salt - sodium.

Medicinal properties

After a long and detailed study of the composition of the radish, scientists came to the conclusion that one of its main health benefits is the content of various **phenolic compounds**. Their main value is that they provide antioxidant protection to the body ^[8]. However, their effect is not limited to this. For example, they enhance the effect of vitamin C, reduce capillary fragility, and support the normal functioning of the cardiovascular and digestive systems.

Researchers believe that anthocyanins, the plant pigments that give radishes their reddish color, have a distinct anti-inflammatory effect that can delay or prevent early onset of chronic disease. Due to their antioxidant properties, they can also protect the body from the development of certain types of cancer (intestine, stomach, kidney, mouth) ^[10]. The phytochemicals indoles (especially indole-3-carbinol) also contribute to the prevention of cancer.

In addition, albeit in a small concentration, but in the radish there are polyunsaturated fatty acids (omega-3 and omega-6), which are not synthesized by our body and come only from food. Nowadays, many people do not get enough of these acids, so any source of them is an important part of the diet. They take part in many processes and have a positive effect on the activity of the nervous system. Moreover, they help lower cholesterol levels, thin the blood and, therefore, prevent the formation of blood clots. They are also associated with improved liver function.

Together with radish, coarse dietary fiber (fiber) enters the body. They improve intestinal peristalsis and thus help digested food move faster and easier to the rectum. Fiber eliminates constipation and cleanses the digestive tract, absorbing toxic elements. By the way, in one of the studies on rats, Korean scientists noticed that not only the root crop itself, but also the leaves of the plant contribute to the normalization of the stomach and intestines. ^[9]. In addition, radish stimulates the production of bile, which is also necessary for the digestion process.

Fresh radishes are often recommended for diabetics. It stabilizes and keeps the sugar level normal for a long time. This crunchy vegetable is also recommended by dentists, because, firstly, it strengthens the teeth, and, secondly, it stimulates the abundant production of saliva, which flushes the oral cavity and especially the interdental space.

In terms of minerals, radishes are the richest in potassium, which has a beneficial effect on the cardiovascular system, helping to reduce high blood pressure ^[11]. Zinc and phosphorus in combination with vitamin C help improve skin condition. And calcium, together with folic acid, is especially useful for women during pregnancy, as they ensure the correct formation of the nervous and musculoskeletal systems of the child.

Finally, radishes are considered an effective natural diuretic. Due to this property, it is able to cleanse the kidneys of toxic elements. With inflammation of the genitourinary system, root juice can reduce pain symptoms that occur during urination.

Use in medicine

To date, radish is not used in the manufacture of medicines, however, scientists believe that this root crop has potential. The World Health Organization and the International Agency for Research on Cancer have long been conducting a large-scale study in which they monitor patients with a high risk of developing cancer who eat certain vegetables. Then experts evaluate how the product affects the containment of the disease.

It turned out that the biologically active substances contained in the radish show promising results in relation to colorectal cancer. Scientists hope to create a series of drugs based on them, which, in comparison with synthetic drugs, will have fewer side effects.

Also in pharmacies, you can find nutritional supplements based on sulforaphane and indole-3-carbinol (chemicals more often extracted from broccoli, less often from radishes). They are credited with a lot of miraculous effects: from painless weight loss to cancer treatment, but you should be careful and consult a doctor before using these drugs.

In folk medicine

- **Roots**

According to traditional healers, radish can help to cope with varicose veins in the early stages. Root vegetables are crushed to a puree state, mixed with a small amount of lemon juice and rubbed into the skin. The course of treatment is 3 weeks. In addition, gruel from crushed radish is applied as compresses for pain caused by sciatica and neuralgia. A grated radish, mixed in equal proportions with hot water, can be useful for mild frostbite. Before applying such compresses to the affected areas, the liquid must be cooled.

Another way of external use of root crops is the fight against discolored areas of the skin with leukoderma (disturbance of skin pigmentation, expressed in the form of rounded light spots). Sliced vegetables should be dipped in vinegar or ginger juice and applied to the skin.

As for internal use, it is believed that the radish can tidy up the digestive system and get rid of indigestion. To achieve this effect, it is necessary to grind 5-6 root crops, mix them with one teaspoon of starch and 200 ml of milk. The mixture should be drunk immediately after preparation. To improve metabolism, take 50 g of dried radish, pour 200 ml of water over them and put in a water bath for 20 minutes. Then cool, strain and take 50 ml three times a day for 30 days. In addition, healers claim that the use of fresh radish helps to maintain potency in men.

According to the recipes of traditional medicine, radish infusion helps to improve the condition of anemia. To prepare this healing remedy, you need to take a jar of dark glass, pour 50 g of dried root crop into it, add 100 ml of vodka, close and insist for two weeks. After that, strain the resulting tincture through cheesecloth and add the same amount of water. Take 20 ml at bedtime for one month.

- **Leaves**

Radish tops are mainly used for liver problems or for preventive cleansing of this organ. One of the most popular remedies is a decoction of the young leaves of the plant. A bunch of washed greens is cut

into large pieces, poured with two glasses of water and put on fire. Cook this mixture until half of the liquid has evaporated. Then some sugar is added to it and consumed instead of water. The same decoction is advised to take with jaundice and hepatitis. Only with these diseases, bean-based soup with dried tops and radish root must be added to the diet.

An effective remedy for burning in the liver, folk healers call tea from radish leaves. They are washed and brewed with boiling water, adding sugar. However, the factors that cause burning can be very different and it is best to consult a doctor first to find out the causes of pain.

In addition, radish tops are also used in the fight against atherosclerosis. The leaves, ground to a puree state, are mixed with honey in equal proportions and taken 2 teaspoons twice a day for two weeks.

- **Juice**

Radish juice is actively used to treat various ailments in the Middle East, but our traditional healers have recently often used it in the preparation of their remedies. It should be noted that this juice itself is too concentrated and has a strong irritant effect on the mucous membranes of the digestive organs, so it is usually mixed with other liquids.

For example, it is believed that small stones can be removed from the gallbladder thanks to a mixture of radish and beet juice. Carrot- radish cocktail helps to restore the normal functioning of the mucous membranes of the gastrointestinal tract. And the combination of radish juice, cucumber and bell pepper alleviates the symptoms of respiratory diseases. During the period of exacerbation of bronchial asthma, it is advised to mix 100 ml of juice and 20 g of honey and take this remedy 2 teaspoons three times a day.

For colds, traditional healers advise drinking a mixture of radish and onion juices with honey. Some healers believe that radish juice mixed with black salt lowers body temperature and will be effective during a fever.

In addition, it is believed that radishes have anti -itch properties and may be helpful for insect bites. It is recommended to lubricate the affected areas with root juice in order to reduce swelling and burning.

in oriental medicine

Unani system of traditional medicine , adopted by the Arabs from the ancient Greeks, and in Indian Ayurveda , radish has long been used to treat jaundice, gallstones , liver diseases, rectal prolapse (rectal prolapse) and indigestion ^[12] .

Ancient Chinese healers attributed radishes to “warming” foods and correlated them with the meridians of the lungs, spleen and stomach. They believed that this root vegetable stimulated the flow of vital Qi energy , so it was added to many herbal medicines either fresh or dried. Juice was also extracted from it. It was believed that the radish helps to eliminate excess mucus from the body, so it was used to treat respiratory diseases. He also treated almost all problems of the gastrointestinal tract.

Modern folk healers of the East endow the root crop with rejuvenating properties due to its ability to “warm up” the body and improve digestion.

In scientific research

A number of studies demonstrate the effectiveness of some biologically active components from the composition of the root, in particular sulforaphane , in suppressing the development of cancer cells in

the human body. Moreover, experiments carried out outside a living organism (*in vitro*), it was proved that the extract of these compounds not only slows down the development, but also causes the destruction of pathogenic cells ^[3]. This substance is especially effective in the fight against breast cancer ^[6].

Ohio University researchers have also found that some of the compounds found in radishes could potentially be used to treat cancer. In their experiment, they introduced into the diet of rats infected with colon cancer, anthocyanins - a natural dye that determines the color of the radish. As a result, a 50-80% decrease in tumor growth rate was recorded compared to a control group of rodents that did not receive any dietary supplements ^[4].

By the way, with regard to the already mentioned sulforaphane, it has not only anti-cancer properties. Scientists believe that due to its anti-inflammatory and antioxidant properties, it makes a significant contribution to the body's defense against cardiovascular diseases that develop due to oxidative stress ^[5]. Interestingly, this substance is formed in radishes solely as a result of mechanical damage (cutting, chewing) and the chemical reactions that follow.

Among other things, scientists have found that the root vegetable has an antidiabetic effect. This effect is associated with the ability of its components to enhance the mechanisms of antioxidant defense of the body, reduce the level of oxidative stress and oxidative degradation of lipids. In addition, they help to improve the absorption of glucose and, in general, have a beneficial effect on energy metabolism. Moreover, scientists believe that radish seeds and leaves can be useful not only as a preventive agent, but also in the case of already developed diabetes ^[7].

Weight regulation

Radishes are a low-calorie vegetable, which is why they are often included in weight loss diets. There are even so-called mono -diets, which involve eating only root crops. It should be noted right away that nutritionists are skeptical of this option, since it can cause problems with the kidneys and gastrointestinal tract, and also deprives the body of nutrients from other foods.

In addition to the fact that radishes contain a minimum amount of calories, they also have a low glycemic index - they do not increase blood sugar levels. Moreover, this root crop fills the body with coarse dietary fiber. Firstly, they contribute to the establishment of metabolism, and, secondly, they bring a long-lasting feeling of satiety.

However, uncontrolled consumption of radish alone will not lead to a magical loss of extra pounds, but can cause significant harm to the body, so it is enough to include 4-5 salads from this vegetable per week in your menu. Experts recommend combining it in salads with other low-calorie but healthy ingredients like leafy greens, cucumbers, celery or apples. By the way, mustard oil, which gives the vegetable a piquant taste, increases appetite, so it is better to use less spicy root vegetables in diets.

It must also be understood that getting rid of excess weight occurs only through an integrated approach that includes a healthy diet and active physical activity.

By the way, experts also included radishes in the now popular DASH diet, which was developed specifically for hypertensive patients in order to reduce pressure. In addition to the main effect, it turned out that this diet contributes to the normalization of weight and stabilizes sugar levels. Such a diet is balanced in the content of important components such as proteins, minerals and dietary fiber. The emphasis is on drinking enough fluids, vegetables, fruits, grains and legumes. Limit the consumption of sweets and fats.

In cooking

Radishes do not enjoy the popularity of such vegetables as tomatoes or onions, but are known in almost all corners of the world, including ours, where it is traditionally added to okroshka. In general, the root crop is used both as one of the components of various salads, and as a self-sufficient snack, and sometimes even as a side dish for meat dishes. Sauces are also made on the basis of radishes. The most common use of a vegetable is fresh, but it is also fried (like french fries), pickled, canned, stuffed (with meat, mushrooms, cheese) and baked. Surprisingly, inventive housewives even prepare marmalade from this root crop.

To prepare this unusual dessert, 250-300 g of radish must first be left in cold water for 30 minutes, and then boiled over medium heat for 30 minutes. Note that in hot water, the vegetable will lose its bright color, but this will not affect the taste of the dish. Mash the boiled radish with a fork and add a grated sour apple to it. Add half a glass of vanilla sugar to the resulting mixture and leave on low heat for 2 hours. At the end, add cinnamon and orange zest to taste. If the marmalade turned out to be thick, it can be laid out in molds and cooled; if it looks like jam, it can be spread on toast or crackers.

Among the most popular snacks, radishes with cottage cheese can be distinguished. It is done very easily: grind the root crop, add cottage cheese, sour cream, herbs, salt, spices and mix. By the way, it is customary to serve radish snacks before main courses, as this vegetable can increase appetite. As for sauces, a recipe is suitable for dressing summer salads, according to which you need to knead 2 boiled yolks, add 200 g of sour cream, 4-5 radishes, half a pickle, green onions, parsley and half a teaspoon of mustard to them. Then mix everything in a blender. By the way, sometimes garlic is replaced with radish in Caesar salad - it, like garlic, adds spice, but does not leave a specific smell.

It is interesting that usually in cooking they use the roots themselves directly, without using the leaves of the plant in any way. Recently, however, radish tops are gaining more and more popularity, especially among vegetarians. She, like the root crop itself, is rich in vitamins and minerals and is gradually absolutely deservedly included in the diet of a healthy diet. It can be added to vegetable soups, green borscht, salads (instead of arugula or iceberg), as well as stewed and served as a side dish.

Note that when buying radishes in winter, you may encounter the fact that root crops are devoid of the usual piquancy. The thing is that in the cold season this vegetable is imported from hot countries (Armenia, Israel), where it is often and abundantly watered, which is why the concentration of mustard oils in its composition decreases and, accordingly, the level of sharpness decreases.

In cosmetology

Due to the successful combination of alkaloids, polyphenols, a complex of enzymes and other useful substances, radishes are actively used both in professional and home cosmetology. In the manufacture of eco-products containing exclusively natural ingredients, the use of radish root filtrate fermented by lactic bacteria has become especially popular.

Due to its antiseptic and fungicidal properties, it has become a healthy alternative to parabens, which act as preservatives and prevent the growth of bacteria and mold in cosmetics. It does not irritate even sensitive skin. Today, this natural preservative can be found in many skin care products. For example, the German brand Judith Williams or Indonesian - By-cosmetics.

As for homemade products, there are a large number of different recipes. For the most part, radish-based masks are designed for oily skin, as well as in the fight against acne. Here is some of them:

- **for oily skin.** Mix 50 ml of milk and 10 root vegetables chopped with a blender. Apply to face and leave for 30 minutes, then rinse with warm water;
- about **acne.** Mix 3 tablespoons of radish, chopped in a blender, with one teaspoon of honey and one teaspoon of calendula tincture. Apply a thick layer on problem areas, leave for 30 minutes, then rinse with warm water.

In cosmetology, as in cooking, not only the roots of the plant are used, but also its ground part. For example, the leaves are often added to a nourishing mask suitable for all skin types. To prepare it, you need to mix a tablespoon of chopped tops, 6 drops of olive oil and one teaspoon of starch. The mixture is left on the face for 10 minutes, then washed off with warm water.

In addition, it is believed that radish leaf juice can be used in masks aimed at whitening the skin of the face and getting rid of age spots. According to the recipe, you should mix one tablespoon of parsley juice, cucumber, radish greens and one tablespoon of sour cream. Keep on face for about 15 minutes, then rinse with warm water.

Dangerous properties of radish and contraindications

Undoubtedly, the radish root is incredibly useful, but even for it there are contraindications. No matter how strange it may sound, but precisely because of its beneficial antiseptic and bactericidal properties, radishes are not recommended for:

- exacerbations of diseases of the gastrointestinal tract;
- inflammation of the thyroid gland;
- ulcer and pancreatitis;
- intestinal infections;
- hypervitaminosis and goiter;
- irritation of the mucous membrane and gastritis;
- exacerbation of diseases of the liver and kidneys;
- cholecystitis.

Radish increases irritation of the mucosa and enhances the secretion of pancreatic enzymes, which are already sufficiently irritated due to the above diseases. In non-acute forms of these diseases, it is allowed to eat portions of no more than 100 grams.

In addition, it is recommended to refrain from eating radishes after a heart attack. The essential oils contained in the root crop can stimulate an increase in heart rate and thereby put an increased burden on the heart. Moreover, oxalic acid prevents the complete absorption of calcium, which is necessary for the normal functioning of muscles, including the heart. Thus, it is necessary to allow the body to recover from the illness, and only after a few months begin to gradually return the vegetable to the diet.

Selection and storage

The choice of a root crop should begin with an inspection of the skin: it should be smooth, even and whole - without cracks, which indicate that the vegetable was grown without sufficient moisture. Do not take radishes with black spots, as they indicate rot. You also need to feel the root crop, check its surface for “breakdown” (a good radish will be hard, and an overripe one will be soft). It is best to choose radishes with leaves, as green tails are the best indicator of freshness.

It is believed that radishes easily absorb nitrates, which unscrupulous growers use to feed plants to speed up maturation and increase yields. Indeed, the very first radish may not be very “clean”, but

experts say that you can get poisoned by eating about a kilogram portion at a time. So, in general, you should not abuse the first root crops, but you do not need to completely abandon them either.

There are several ways to store radishes:

- at room temperature;
- in a refrigerator;
- in a jar of water;
- in the cellar;
- in dried form.

The first method is suitable for those who are not going to put off eating radishes indefinitely: at room temperature, they will lie for several days. Do not trim the tops, because this way the edges can become weathered, thereby depriving the radish of taste. But for storage in the refrigerator, it is better not to leave the ponytails, as they will quickly draw moisture out of the root crops. By the way, it is advisable not to wash the radish before placing it in the cold, so it will lie for about a week. When putting radishes in a bag, you can moisten it a little and the main thing is not to tie it, but simply roll it up - additional cuts or holes in the package will create good ventilation conditions.

The method of storage in a jar of water allows the vegetable to live for several months, but at the same time its usefulness is partially sacrificed. The algorithm of actions is as follows: collect cool boiled water in a jar, put the radishes peeled from the tops, put in the refrigerator and change the water every 4-5 days. Many also store dried radishes. The chopped vegetable should be boiled in salted water, and then dried in the oven. Then send in a bag or cloth bag. This type of radish will be stored in the refrigerator for several months, but, unfortunately, we are no longer talking about the presence of useful substances in it.

Cellar storage is the best way to stock up on radishes for the winter. To do this, fill the bottom of a wooden or plastic box with sawdust or sand, put the radish on top in one layer, then sand again. Rows can be alternated to the very top of the box. Please note that the root crops must be previously cleaned of tops and dirt, but in no case washed. The top layer should consist of sand or sawdust and completely cover the vegetables. During storage, you need to monitor the condition of the radish, controlling the level of humidity and removing rotting vegetables.

Varieties and cultivation

Radishes are considered to be one of the fastest vegetables, as it can take only 18-20 days from planting a seed to the first harvest. Compared to other crops, radish farming is not very complicated. It is important to choose the right variety, since the ripening of root crops depends on the length of daylight hours in a particular area. An important role is played by the quality of soil preparation and the intensity of irrigation.

For early sowing, it is preferable to choose soil on the southern slopes. Since autumn, it is advised to add 3-4 kg of humus, a little phosphorus and potash fertilizers there, and in the spring you can add a little nitrogen (at the rate of 10 g per 1 square meter). The soil should be loose, and the planting should not be too thick (3-6 cm between plants and 10-12 cm between rows). Watering should be regular, but moderate, since an excess of moisture leads to damage to the radish with a black leg, and a lack of it leads to cracked fruits of a non-standard shape.

As for the varietal diversity of radishes, there are two large groups: *European varieties* and *Sino-Japanese*. The first usually bring a crop in the year of sowing, and the second takes two years to start

fruiting. European radish is more common in our open spaces, and among the most popular are the following varieties:

- Early ripe "**Early Red**" with good watering gives root crops weighing up to 120 g. The flesh is crisp and moderately spicy.
- ripening variety "**Rebel**" bears small fruits weighing up to 20 g with a pronounced spicy taste and smell;
- ripening "**Red Giant**" gives fruits of a rounded shape with crispy and very juicy pulp. Reaches a weight of 200 g. It grows well at a temperature not exceeding 25 degrees.

If we talk about unusual species, then in no case should we miss the "watermelon" radish, which is now at the peak of popularity. It differs from the usual root crop in its appearance: the peel has a light green or white color, and the core is scarlet. At the same time, its taste is bitter on the outside, and sweet on the inside. Radishes of the Zlata variety are also distinguished by a special "appearance". Root crops have a bright golden color and a rough surface. There are also white and purple radishes. A special form of radish varieties "18 days" is cylindrical.

In general, if there are no medical contraindications, then radish definitely needs to be introduced into the diet. Firstly, this low-calorie vegetable is suitable even for those who are on a diet. Secondly, the radish will provide the body with many nutrients and vitamins, as well as enhance the mechanisms of antioxidant defense and protect cells from premature aging and damage.

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Radish - useful properties, composition and contraindications

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