

Journal of Healthy Nutrition and Dietetics

In issue:



Orange



Cabbage



Pumpkin



Apple



Carrot



Pineapple

A detailed description of the useful, healing and dangerous properties of each product



Vitamin E

Top 30 foods rich in vitamin E, why the body needs it, daily requirement, signs of deficiency and excess



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Orange (lat. *Citrus × sinēnsis*)

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

Keywords: orange , beneficial properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

100 g of fresh oranges contains [33]:					
Main substances:	G	Minerals:	mg	Vitamins:	mg
Water	86.75	Potassium	181	Vitamin C	53.2
Carbohydrates	11.75	Calcium	40	Vitamin PP	0.282
Sugar	9.35	Phosphorus	fourteen	Vitamin B6	0.060
Alimentary fiber	2.4	Magnesium	ten	Vitamin B2	0.040
Squirrels	0.94	Iron	0.10	Vitamin E	0.18
Fats	0.12	Zinc	0.07	Vitamin B1	0.087
calories	47kcal				

Use in medicine

Speaking about the use of pulp and juice of oranges in medicine, they usually mean the light laxative, diuretic and choleretic effect produced by the product, anti-sclerotic effect, accompanied by a decrease

in the permeability of the walls of blood vessels and their strengthening. In addition, numerous medical studies have established a number of other useful properties of the product.

- **Antioxidant action.** The anthocyanins contained in oranges, acting as antioxidants, reduce the risk of a number of age-related diseases ^[9], including cardiovascular and cataracts ^[10]. Among all the studied plants of the rue family, it is orange that has the most pronounced antioxidant properties ^[11]. Among other things, it also prevents the development of hypoxia in cells during physical exertion ^[12]. Similar antioxidant properties are characteristic not only for the pulp, but also for the peel of this fruit ^[13].
- **Suppression of the activity of a number of bacteria.** The antibacterial function arises due to the fact that orange juice is able to stimulate the activity of macrophages ^[16].
- **Treatment of neurodegenerative diseases.** A hot infusion of orange peels has been shown to inhibit biturylcholinesterase and MAO. And this, in turn, opens up prospects for its use in the treatment of neurodegenerative diseases ^[20].
- **Improvement in diabetes.** In diabetes mellitus, an alcoholic extract of the crusts can prevent the development of nephropathies ^[23] and improve skin regeneration in diabetic patients ^[24].
- **Influence on the cardiovascular system.** In the prevention of diseases of the heart and blood vessels, orange juice flavonoids are useful, since they have antioxidant, hypoglycemic and hypolipidemic effects ^[25]. Juice also "stops" the inflammatory reaction that occurs in the vascular system, due to the consumption of fatty foods ^[26]. A likely reason for this is a decrease in lipid peroxidation caused by juice antioxidants ^[27].
- **Lowering blood pressure.** Orange juice, additionally enriched with a vitamin complex, can lower blood pressure ^[28].
- Also, the pulp of orange fruits is recommended in dietary nutrition programs for beriberi and anemia ^[29].

In folk medicine

Ancient folk medicine used orange juice mixed with sugar to "expel bile" and "calm down the sharpness of the blood." The standard of medicine prescribed juice for "hot coughs" and for accumulation of "phlegm" in the lungs. To improve mood, get rid of vomiting and nausea, it was necessary to mix 5 grams of grated orange peels with water and drink ^[30].

Modern traditional medicine of various peoples is distinguished by regional specifics. So, for example, in Bulgaria, as a sedative, an infusion of orange tree leaves is used at the rate of 3-4 grams of leaves per glass of water. In Italy, orange water is recommended both as a hemostatic agent and as a diaphoretic. A decoction of unripe fruits, women who prefer folk methods, at their own peril and risk, can be used for uterine bleeding ^[5].

In the East, the dried peel of the fruit was also traditionally used for heavy discharge during menstruation, and was also prescribed for fevers. Hot infusions were made on the flowers of the orange tree and the bark, which were considered a good sedative. These same infusions, according to tradition, helped to improve appetite. ^[4], which partially echoes the modern ideas of nutritionists.

In scientific research

Scientists are actively researching orange fruits, as they have a large number of useful elements. For example, these citrus fruits help improve the condition of the liver. Studies have shown the ability of orange juice to prevent the development and inhibit fatty degeneration of the liver ^[14].

Researchers believe that oranges are also useful in the treatment of asthma. The anti- asthma effect was demonstrated in an experimental study by the hesperidin and naringenin contained in the juice .
[15] .

In addition, alcoholic extracts of orange peels in the experiment demonstrated an inhibitory effect on the famous *Helicobacter bacterium. pylori* ^[17] . In addition to it, the bark extract also has a bactericidal effect on microorganisms such as *Klebsiella . pneumonia* , *Escherichia coli* , *Staphylococcus aureus* , *Shigella flexneri* and others ^[18] . This number also includes pathogenic microbes of the oral cavity ^[19] .

Aqueous extracts of oranges are able to inhibit acetylcholinesterase , which makes their therapeutic use in Alzheimer's disease possible ^[21] . Placebo-controlled and randomized trials have demonstrated improvements in cognitive function in the elderly with long-term orange juice intake ^[22] .

Weight regulation

There is an opinion among the people that an orange "burns fats", so with its help you can quickly lose weight. In fact, this mechanism is indirect and manifests itself through the action of a substance called " naringin " . As nutritionists explain, when naringin enters the liver of a well-fed person, a signal is triggered that tells the body that it is hungry and needs to start burning fat to replenish energy. However, the same nutritionists warn that this "orange weight loss" can lead to tangible results only if you eat several dozen fruits at once, which is both difficult and unsafe, like any abuse.

However, on the basis of oranges, some nutritionists develop their own diets. So, for example, Margarita Koroleva, known in the media as a nutritionist of the "stars" (since Valeria, Anita Tsoi, Nikolai Baskov are seen among her clients), created a short-term "Orange Diet", which allows you to reduce weight up to 5% of the original. The weight loss program is designed for 2 (maximum 3) days. During this time, you can eat only oranges and the protein of boiled eggs, and meals should be made every hour. This rhythm is based on the idea of activating metabolic processes, which help to lose weight.

It is important that when we talk about orange juice, we always mean freshly squeezed juice. If we take fresh juice, store-bought reconstituted juice and nectar for comparison, fresh juice (70.9 mg) will have the most vitamin C per 100 grams, and reconstituted juice will take second place (57.3 mg). Nectar will be in third place with 53.2 mg of the vitamin, but the gap from second place will be insignificant.

The term "reconstituted" in relation to orange juice is applied to a product made from concentrated juice by dilution. Sometimes the juice is only pasteurized and in this form (without dilution from the concentrate) is delivered to the shelves. In this case, the packaging will be marked: abbreviation: " NfC " and / or the full inscription " Not from Concentrate " ("Not from concentrate"). But such juice always undergoes heat treatment.

For the industrial production of juices, both expensive varieties rejected due to their size and appearance, and special varieties with reduced consumer properties are used - from those that are poorly cleaned, have a small size and unsightly appearance (for example, a very juicy Salustiana variety , actively cultivated in Valencia).

In other words, the juice itself is often made from the same oranges, which, in the form of a whole fruit, lie side by side on the counter. And nutritional restrictions arise not so much because of the raw materials themselves, but because of the way store-bought juice is prepared, in which a lot of sugar is always added. Orange nectar in this parameter is the most harmful of the juice options. It contains

about 11.8 mg of sugar, reconstituted - about 11 mg, and freshly squeezed - 8.9 mg of sugar per 100 grams.

In cooking

In a normal (non-dietary) diet, an orange is included in numerous dishes of various cuisines of the world. This fruit traditionally goes well with vegetables, fish, poultry meat. For example, when preparing duck with orange sauce, finely chopped chili, a pinch of sugar and salt are added to freshly squeezed juice. Then this composition is brought to a boil. And to complete the preparation of the sauce of the preferred consistency and density, starch diluted with water is slightly poured into the mixture in a thin stream.

Salad recipes often use both the pulp and zest of citrus. But the range of uses of oranges is much wider. From them - more precisely, from orange peels - they even make mustard, which is known in Italy as a traditional seasoning for meat. The crusts are brought to the factory in salt water (preservative), and after washing, they are boiled in syrup. To preserve the aroma and taste of the zest, add a little sugar - just so that the sweetness is absorbed. Figs, pears and peaches help diversify the taste. A fragrant orange oil is obtained from the zest. Even wild bitter oranges are not thrown away. They prepare a specific jam with a spicy taste.

There are two basic culinary techniques that make it easier to make oranges yourself:

1. To make it easier to separate the peel from the pulp, cooks make special cuts. If we draw an analogy with the globe and the terminology adopted by geographers, then the "caps" are cut off at both "poles" of the fruit, and then 5-6 cuts are made along the "meridians".
2. To make it easier to squeeze the juice from the pulp, the fruit is cut in half and put in the microwave for half a minute (power about 500 W). This allows the separating membranes to be destroyed and the juice to flow out more easily.

In cosmetology

The benefits of home use of face masks made from grated zest have found indirect confirmation in the research work of cosmetologists. According to scientists, orange peel can prevent oxidative stress and prevent inflammatory reactions in skin cells provoked by ultraviolet radiation^[31]. Only for this, the selected substances must be correctly combined with other ingredients in the cream.

Cosmetic benefits have also been found in orange juice. It turned out that the processes of yeast fermentation in it not only do not reduce the content of biologically active substances^[32], but, on the contrary, increase the content of flavonones, carotenoids and melatonin^[33]. Orange juice hesperidin can inhibit trypsin and the enzyme tyrosinase, and also promotes melanin formation in the skin. Due to the abundance of vitamins and carotenoids, drinking orange juice reduces the harmful effects that drinking alcohol has on skin cells.

Unconventional use

The notion that oranges can poison fats is reflected in an unconventional way of using them: in Jamaica, oranges are used to clean floors by cutting the fruit into slices, and in Afghanistan, housewives wash fats off dishes with juice.

The effectiveness of these techniques can be easily checked on your own, for example, by squeezing juice onto a greasy plate. This method of washing clearly loses to store detergents, but in the absence of "chemistry" or with a conscious rejection of it, it can be considered an acceptable alternative.

Thanks to their natural aesthetics, dried oranges can be used to make an original Christmas tree decoration, especially if thinly sliced oranges are illuminated with garland bulbs.

Dangerous properties of orange and contraindications

People appreciate the benefits of an orange for the economy of countries and for the health or pleasure of each individual. However, this fruit also has dangerous properties that nutritionists and hygienists pay attention to.

The danger of eating the pulp of orange fruits and juices based on it is associated mainly with three factors:

- **Factor No. 1. The effect of an acidic environment on tooth enamel.**

Even with just one orange slice or a few sips of juice, the pH changes, which leads to an increase in the level of acidity in the mouth and threatens to destroy tooth enamel. Shop juices in this sense are even more dangerous due to the high sugar content in the composition. Therefore, hygienists recommend drinking orange juice through a straw to reduce its contact with the teeth. In addition, after eating, it is better to rinse the mouth with water. This will lower the acid concentration.

- **Factor number 2. The reaction of the body to a large amount of juice drunk (eaten oranges) with a potential threat of gastritis.**

Much here depends on individual tolerance. But if one person, without harm to himself, can drink freshly squeezed juice from a dozen fruits on an empty stomach every morning, then another person will most likely soon "earn" gastritis, which nutritionists warn about. The abuse of this fruit does more harm than good.

- **Factor #3. Unpredictable reaction to the combination of naringin with drugs.**

The substance naringin contained in oranges reacts with human liver enzymes. As a result of the interaction, there is a distortion of the intended effect of medicines - it is difficult to predict how the medicine will work. And when alcohol is added to the medicinal-orange "cocktail", cirrhosis of the liver can develop literally within a few weeks. Even regular paracetamol can be dangerous when taken with orange juice. Similar cautions apply to juice and other citrus fruits.

monuments

The monument to the orange, erected in Odessa, tells an episode from the history of the city, and the monument in Tel Aviv tells the story of a whole nation:

1. **Ukraine.** In 2004, a monument to the orange was created in Odessa - the legendary savior of the city from decline. The sculpture is a 12.5-meter (in diameter) bronze fruit mounted on a pedestal, which is carried by three horses. Several slices are "taken out" and replaced by the figure of Paul I. The presence of the figure of the emperor and horses illustrates the story of how in the winter of 1800 the city magistrate sent 3,000 perfect oranges to Paul, hoping to receive a loan of 250 thousand rubles in order to resume the construction of the port. The idea worked and the city received funding.
2. **Israel.** The Soaring Orange Tree in Old Jaffa was created in 1993. According to one version, it symbolizes the fate of a nation that has existed for a long time "in limbo", without roots immersed in its land - without its own state. The composition is a living orange tree growing in a large egg-shaped pot suspended on cables.

3. **Turkey.** In this "orange" country, there are many sculptural compositions and fountains that play with the theme of the orange fruit.

In art

Many Soviet children first learned about such a fruit as an orange from the *cartoon about Cheburashka*. The protagonist was an unknown animal that lived in the rainforests, but ended up in a big city thanks to the fact that he climbed into a box of oranges, where he fell asleep.

The name of the fruit is also found in the title of the famous "adult" book by Anthony Burgess " *A Clockwork Orange* ", which was later filmed by Stanley Kubrick. This name appeared due to the consonance of the Malaysian word " orang ", which translates as "man", and the English word " orange ", translated as "orange". In giving the title to his book, Burgess played on an idiomatic expression used by London workers who called unusual, bizarre and strange things without a clearly defined purpose "crooked like a clockwork orange."

In Kira Muratova's film " *Short Encounters* ", an orange is presented as a symbol of the meeting of the invisible world of deep experiences and the world of higher existential meanings.

Botanical description

Oranges in Russian are the fruits of the *rue family*, the *orange* subfamily, the genus *citrus*. The generally accepted word for the name of the fruit came from the Dutch language, along with the first deliveries of these fruits (more precisely, berry-like fruits) to Russia.

origin of name

Today, in the literary Dutch language, the use of the name " *sinaasappel* " is considered correct, and the word " **appelsien** " is marked by Dutch etymological dictionaries as a regional tracing paper from the French phrase " *pomme de Sine* ", which translates as " **Chinese apple** " ^[1]. This mention of China directly points to the country from which the history of the orange originates.

Story

Southeast Asia and China are considered to be the birthplace of oranges, where these trees were cultivated two and a half thousand years BC. e. It is assumed that the first fruit trees of this species were the result of crossing tangerines and pomelo. Orange came to Europe through Spain by about 1100 and then, with the beginning of the conquest of the New World, it was "relocated" (introduced) to America. It is known that by 1579 orange trees were bearing fruit in St. Augustine, on the Atlantic coast of northeast Florida.

From about the 1870s in the United States, oranges, which were previously propagated by growing seeds, began to be cultivated using budding (eye grafting). This made it possible to reduce the degree of progeny variability, to achieve a more stable varietal identity, and with a purposeful expansion of species diversity, this made it possible to use as rootstock those citrus species that were better adapted to local conditions: climate, soil, diseases.

The United States today ranks second after Brazil in terms of orange harvest and first in terms of juice production ^[2]. China, Mexico, Egypt, Turkey, Pakistan, India, Spain, Italy, and Iran play a significant role in the cultivation and export of oranges. In industrial volumes, the fruits are also collected in Greece and South Africa.

Nowadays, the location of orange plantations depends, first of all, on suitable climatic conditions. However, at the end of the 16th century, with the advent of fashion for oranges in the high society of France, a structure was constructed to preserve and grow heat-loving oranges “for beauty”, which got its name from the French word “orange”, which in French means “orange”, - greenhouse. Greenhouses gained popularity and began to decorate rich houses not only in the south of Europe, but also in more northern countries.

In the Soviet Union, oranges began to appear relatively widely on the shelves during the reign of Nikita Khrushchev. Moreover, then mainly one was exported, the Israeli variety Jaffa, named after the old name of the port city, from which Tel Aviv later “grew”. The popular variety took root in other countries, but it was brought to the USSR exclusively from Israel, thanks to the “orange deal” under N. Khrushchev. Its essence was that the property located on the territory of Israel, which once belonged to the Russian Empire and later passed to the USSR, was decided to be sold under Khrushchev. The amount of the deal was about 4 million dollars, a significant part of which the Soviet Union received in the form of orange tranches.

Today, some varieties, while retaining their taste, have lost their economic importance for the economies of the producing countries. This happened with the Jaffa variety, which, due to the high cost, was no longer exported. But it was replaced by many other varieties of orange, the total number of which in various sources varies from several tens to several hundreds.

Growing features

Depending on the variety, orange trees can reach different heights: from meter-long indoor “bushes” to 12-meter plants. Some trees live up to 150 years, bringing about 35-38 thousand fruits in harvest seasons. The average age of orange trees is about 75 years.

The crown of this citrus can be both pyramidal and rounded. The oval leaf of the plant with a sharp end and sometimes wavy edges contains aromatic oils in special glands near the surface. The life span of such a leaf is an average of 2 years. On the shoots of plants of a number of varieties, 8-10 cm spikes are found.

Flowers up to 5 cm in diameter can be pink and white and grow in inflorescences of 6 pieces, as well as single flowers. They are in the bud stage for about a month, and then, having blossomed, they fade in 2-3 days. The flowering time of the whole tree takes about two weeks. During this time, the local beekeepers try to pump clean and transparent orange honey, which has a characteristic light texture.

At home, an orange can be grown from a stone in a pot with one part of peat and one part of flower soil. Such trees are characterized by intensive growth, beautiful and dense crown, unpretentiousness and disease resistance. But the plant begins to bear fruit only by the age of 8-10, while all the genetic features of the “parent” are not inherited by its fruits. To preserve genetics, it is more expedient to make cuttings or buy a ready-made seedling.

The plant loves bright diffused light and an air temperature of about 17-28 C. At the same time, flowering occurs at 15-17 C. In plantation conditions, harvesting begins by mid-autumn and ends only by spring.

Varieties

Among the numerous varieties of oranges, some stand out for their special juiciness, others for sweetness or bitterness, and others for their unusual appearance. So, for example, for a wild type of orange, whose trees grow right on the streets throughout the Mediterranean, a very bitter taste is

characteristic. For this reason, its fruits lie under the trees right on the sidewalks, attracting tourists from the northern countries, but leaving the locals indifferent. Sometimes they are used to make jam or used as decorations. Among the mass-cultivated oranges, however, one can single out “special” varieties with their own unique specifics.

The most popular varietal group in the world is the *Navel group*. The English word “*navel*” translates as “**navel**”, which indicates a characteristic feature of the representatives of these varieties: a mastoid rounded outgrowth on the “crown”, which is a reduced second fruit. The larger the navel, the sweeter the pulp will be. Navel trees do not have thorns, making them easy to harvest. The fruits themselves are distinguished by widely demanded consumer qualities: sweetness with a slight sourness, strong citrus aroma, juiciness and a relatively easily detachable peel. Some members of the group, such as the early variety *Navelina*, have thin skins. And another representative of the group - *Cara cara navel orange*, distinguished by ruby-colored pulp.

Blood Orange group of varieties is united by the presence of pigments in the pulp, which make it a blood-red color. The pigment appeared in the course of a natural mutation and was first found in Sicily, for which the fruits of this group received the alternative name “*Sicilian oranges*”. The color depends not only on the variety, but also on the growing conditions. The flesh of blood oranges has a sweet and sour taste. The peel separates relatively poorly. Depending on the particular variety, it may have a brown, reddish or orange color. The most famous varieties of the group are: **Moro** with flavors of wild berries and raspberries, *Sanguinello*, *Tarocco* and some others.

As for ordinary oranges, among other groups, these fruits stand out for their attractive industrial characteristics: they give very large yields, tolerate road well and have a long shelf life. The most famous varieties of ordinary oranges are Verna, Hamlin, Salustiana.

In addition to the groups described, there are numerous orange hybrids from which a separate rating could be made: citrange, clementine, tangor, agli-fruit, etc. The Thomasville hybrid looks the most bizarre, which, in addition to orange, was formed by kumquat and poncirus. In shape, it is more like a fleshy pear.

Selection and storage

Oranges most often reach the consumer in good condition, because citrus producers and suppliers are financially interested in making their products as profitable as possible on the counter. Therefore, oranges for transportation are removed slightly unripe, washed and coated with wax, which includes fungicides that inhibit the activity of fungi. The concentrations of the pesticide in wax are very low and safe for humans, even if accidentally ingested with food. After processing, each fruit, if it is expensive varieties, is wrapped in unglued paper and packaged in boxes of several hundred pieces.

The selection of oranges for sale involves the rejection of small, damaged and scratched fruits. However, before buying, it is best to make a visual inspection of the integrity of the peel yourself. The fact is that there are a lot of flies on citrus plantations, which, using microdamages in the peel of the fruit, lay eggs in the skin of the fruit. In this case, micro-holes with darkening around them are visible on the surface. The removal of such fruits is usually handled by harvesters, but does not place additional control.

Fruits are most often affected by insects on those plantations where chemical processing is used to a minimum. As a rule, this method of cultivation is typical for “organic farming” and the cultivation of organic products. These fruits are more expensive than those grown with pesticide protection, but they are guaranteed to be nitrate-free. On such plantations, a bacterial composition can also be locally sprayed, which destroys the most dangerous pests for oranges, but is harmless to humans. Often,

conditionally beneficial insects (for example, beetles that eat aphids) are used to control conditionally harmful insects.

Despite ongoing research, it was not possible to identify differences in compositional and utility parameters between organically grown products reaching the consumer and products that were harvested after treatment with normalized doses of various preparations. However, demand here not only dictates supply, but also helps some countries to support the industry and not lose competition to the “cheaper” suppliers of oranges to the market.

The duration of storage of citrus fruits depends mainly on the degree of ripeness at the time of purchase, temperature and humidity. Without any special conditions, ripe oranges can be stored for about a week. To increase the storage time up to 1.5-2 weeks, it is better to put the fruits in the compartment of the refrigerator intended for fruits.

If we are talking about long periods of storage, then you can focus on the following temperature-humidity ratios:

- For unripe oranges, the period can be extended to 5 months by creating conditions for them with a temperature of 5 ° C and a humidity of about 80-85%.
- Fruits with yellowed skin are stored for up to 3 months at a temperature of 3-4 ° C at a humidity level of 85-90%.
- Ripe fruits can be preserved for up to 2 months if the temperature is reduced to 2 ° C and the humidity is raised to 90%.
- It is better to pack the fruits not in a plastic bag, but in napkins (each fruit separately).

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Orange - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of orange 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 fruit are indicated, the use of orange in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of orange on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With his application.



White cabbage (lat. Brassica)

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

Keywords: white cabbage, useful properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

Main substances (g / 100 g):	Raw cabbage contains: ^[5]
Water	92.18
Carbohydrates	5.8
Squirrels	1.28
Fats	0.1
Calories (kcal)	25
Minerals (mg/100 g):	
Potassium	170
Calcium	40
Phosphorus	26
Sodium	eighteen
Magnesium	12
Vitamins (mg/100 g):	
Vitamin C	36.6
Vitamin B4	10.7
Vitamin B3	0.234
Vitamin B5	0.212
Vitamin E	0.15

In medicine

White cabbage contains 16 free amino acids (among them tryptophan, lysine, methionine, tyrosine, histamine and others). Cabbage is rich in vitamins A, B1, B6, C (ascorbigen), P, K, antiulcer vitamin U; salts of potassium and phosphorus; trace elements: cobalt, copper, zinc, magnesium. It contains sugars, fats, enzymes (lactose, protease, lipase), hormonal substances, phytoncides.

Cabbage leaves contain fiber, which prevents the development of atherosclerosis and improves the functioning of the gastrointestinal tract. Of the mineral salts, the most important role is played by potassium salts, which activate the removal of excess fluid from the body, and sodium salts, which have the property of binding water. ^[7]

Cabbage owes its many-sided therapeutic properties to the impressive complex of chemicals contained in it. Experimentally and clinically confirmed the high efficiency of the use of fresh cabbage juice in the treatment of gastric and duodenal ulcers. The main active ingredient in the treatment of these diseases is vitamin U, which has antihistamine and antiserotonin properties, as well as improves the metabolism of lipids, thiamine and choline and the metabolism of the gastric mucosa, increasing its resistance to damaging factors and activating the healing process of ulcerative foci. In addition to stomach ulcers, the use of vitamin U is also indicated for enteritis, colitis, skin diseases (eczema, psoriasis, neurodermatitis, superficial allergic vasculitis) and cardiosclerosis. In all these cases, a good therapeutic effect is observed.

It is noteworthy that exposure directly to fresh natural cabbage juice gives better results compared to methylmethionine sulfonium chloride (vitamin U), since the juice has a number of additional properties: bactericidal, bacteriostatic, fungicidal , fungistatic and phytoncidal . It has been experimentally proven that cabbage juice acts as an antibacterial substance even on *Staphylococcus aureus* and tuberculosis microbacteria.

In addition, fresh cabbage juice has antitussive and expectorant properties. The almost complete absence of purine bases in cabbage makes it very useful in the diet of those suffering from gout and cholelithiasis. Juice, salads and cabbage dishes are recommended for diseases of the heart and kidneys (diuretic properties due to the high content of potassium salts), for atherosclerosis (the presence of pectins that can remove toxic substances and cholesterol from the body, as well as fiber that removes cholesterol and improves intestinal motor function).

Traditional medicine uses juice or fresh cabbage in the treatment of insomnia, headaches, jaundice and diseases of the spleen. Fresh and sauerkraut are used to increase appetite, enhance the secretory activity of the gastric glands, regulate intestinal activity, prevent scurvy and chronic dyspepsia, as a diuretic and mild laxative.

Sauerkraut or brine from it is advised for diabetes, liver disease, cholangiohepatitis ; cabbage pickle improves digestion, promotes bile secretion, and has a gentle laxative effect on hemorrhoids. Cabbage juice and its decoction with honey are used for laryngitis, bronchitis and other inflammatory processes of the respiratory tract. ^[eight]

In traditional medicine

Under the name "vitamin U", the industry produces an activated form of methionine - methyl methionine sulfonium chloride. Assign it to 1-2 tablets (0.05 g - 0.1 g) after a meal for a month or 40 days with stomach and duodenal ulcers, chronic gastritis and gastralgia .

It should be remembered that with individual intolerance to vitamin U, nausea, vomiting and the appearance of severe pain are possible, which disappear when the dose is reduced or after the drug is completely discontinued. ^[eight]

In folk medicine

- With beriberi, stomach ulcers and duodenal ulcers, raw, freshly squeezed cabbage juice is prescribed in a warm form, half a cup three times a day for a month. Juice increases appetite and stimulates the release of food juices in gastritis with reduced secretory function.
- Cabbage juice with sugar acts as an expectorant, antiseptic and anti-inflammatory agent.
- Juice digested with sugar is used for a hangover, and mixed with a decoction of cabbage seeds - for sleep disorders.
- Cabbage seeds are used to expel parasites from the body. ^[7]
- In diseases of the liver, gallbladder and cholangiohepatitis , sauerkraut brine is prescribed in a warm form, half a cup three times a day before meals.
- For hemorrhoids accompanied by constipation and bleeding, take 2 cups of warm sauerkraut brine at one time. ^[eight]
- For stomach cancer, they drink warm cabbage juice with honey, half a glass three times a day, 60 minutes before meals. Or prepare a decoction of the seeds and roots of cabbage: boil a tablespoon of crushed raw materials in 200 ml of water for 10 minutes, leave for at least an hour and drink throughout the day.
- For flu, mix aloe juice with honey and cabbage juice (in equal proportions). Pour the mixture with dry wine and insist for a day. Take a teaspoon before meals.
- For insomnia, pour 2 tablespoons of cabbage seeds into 200 ml of boiling water. Let it brew for two hours, then strain and add a quarter cup of fresh cabbage juice to the infusion of seeds. Take three times a day before meals. ^[9]

Externally:

- Fresh leaves are applied to sore joints with gout. Cabbage leaves boiled in milk and mixed with bran are used as a poultice for scrofula and wet eczema. Crushed fresh cabbage leaves combined with egg whites are applied to purulent wounds, burns and old ulcers. Raw juice removes warts, juice diluted with water is effective for gargling with sore throat, stomatitis. ^[7]
- For pain in the neck, in the back of the head, after being in a draft, apply a compress from the mixture to the sore spot: a tablespoon of grated cabbage and three tablespoons of horseradish.
- For migraines, apply fresh cabbage leaves to the head, fixing them loosely with a towel or belt.
- With cracks in the heels, a recipe will help: you need to steam your legs in advance in a soda bath. Apply gruel from grated cabbage and horseradish to damaged heels. Fix the compress with polyethylene and a warm sock, and leave overnight. In the morning, rinse with cool water and lubricate the heels with a nourishing cream.
- With external tumors, cabbage leaves are crushed and the resulting slurry is applied to the neoplasm. ^[9]

in oriental medicine

Avicenna used cabbage for ailments of various origins. He attributed pain-relieving properties to the ashes from cabbage stalks. Cabbage broth and seeds, according to the legendary healer, save from intoxication. And cabbage root ash crushes kidney stones. Unanimously with ancient researchers, Avicenna believed that the composition of cabbage juice and wine is a good remedy for the bites of a poisonous snake or a rabid dog. ^[9]

In scientific research

A team of British scientists representing a research group at the Francis Crick Institute (2018) during laboratory studies substantiated the role of cabbage (in particular, and cruciferous plants in general) in the fight against bowel cancer. **Does cabbage work against cancer?** In the course of the study, the chemical substance indole-3-carbinol was isolated, which is formed during the digestive process and digestion of cabbage (as well as other members of the cruciferous family). This substance promotes the regeneration of the inner layer of the lower intestine, stimulates the activity of new immune cells that control inflammation. This theory is confirmed by the British Institute for Cancer Research in the person of Dr. T. Key: "Studies ... prove that not only fiber, but also special substances found in cabbage and other Cruciferous, significantly reduce the risk of developing colon cancer."

An equally phenomenal property of cabbage is the ability to "remove" radiation pollution from the body. The chemical component of cabbage - 3,3-diindolylmethane - cleanses from the effects of irradiation. So say the scientists developing the project at Georgetown University. ^[ten]

Weight regulation

Cabbage is low in calories and contains no harmful fats. In addition, it contains tartronic acid, which prevents obesity: this acid slows down the conversion of carbohydrates into fats. This fact makes the vegetable indispensable in the menu of people who want to lose weight. But it is more reasonable to include cabbage in your diet if you are losing weight, of course, in fresh or pickled form, since tartronic acid is destroyed during heat treatment.

However, thermally processed cabbage can also become the basis of a diet aimed at quick and gentle weight loss: we are talking about the famous low-calorie cabbage soup. The methodology of this diet allows you to include certain foods scheduled by day, but the main dish is cabbage soup. To prepare such a fat-burning soup, you will need: 2 large onions, 2 Bulgarian green peppers, two large tomatoes, 250 g of mushrooms, a bunch of celery greens, ½ head of cabbage, 3 carrots, salt, pepper, any seasonings or spices to taste. In a deep frying pan, fry finely chopped onions and peppers in a small

amount of vegetable oil. Add chopped tomatoes, mushrooms, celery, cabbage, carrots to them and simmer for a couple of minutes over low heat. Transfer the vegetables to a saucepan, pour in 12 cups of water, add salt, spices and seasonings and cook over medium heat until the vegetable mass is soft. This cabbage soup for weight loss can be eaten several times a day. ^[4,11]

In cooking

As for hot first courses, it is unlikely that in the history of Russian cuisine there is a recipe that can compete with cabbage soup and bypass them in popularity.

In "National Cuisines of Our Nations", the fundamental work of a major scientist of the 20th century. Pokhlebkina V.V., describes the options for preparing cabbage soup: rich (full), prefabricated, lean, simple meat, daily, lazy (rahman), sour from fresh cabbage, gray (seedling), green, nettle and burdock cabbage soup.

- **Sour cabbage soup from fresh cabbage (according to the recipe of Pokhlebkina V.V.)**

You will need: 0.5-0.75 kg of beef brisket, the same amount of fresh cabbage, 6-8 pieces of small green unripe apples, 2 onions, 1/2 turnip, 2 tablespoons of chopped dill, 3 bay leaves, 8 black peppercorns, 100 g sour cream.

Prepare meat broth. When the meat is almost ready, cut the cabbage leaves into small squares, chop the onion, turnip, pour into the broth and cook for a quarter of an hour, then add the apples cut into strips, after another 5 minutes - greens and spices and cook until the apples are completely boiled. Serve with sour cream.

- **The classic recipe for meat cabbage rolls (from the Book of Tasty and Healthy Food)**

Ingredients: 300 g of meat, 800 g of white cabbage, half a glass of rice (it can be replaced with other cereals - pearl barley, millet), 1 onion, a tablespoon of flour, 2 tablespoons of tomato paste, sour cream and butter, a glass of water.

Prepare minced meat, boil rice. Finely chop the onion, lightly fry in butter, combine with minced meat and rice. Salt, pepper. Boil cabbage leaves for 5 minutes, let cool, stuff with minced meat with rice and onions, wrapping each leaf with a roll. In a frying pan, prepare the sauce from a glass of water, flour, sour cream and tomato paste. Bring the sauce to a boil, season with salt and pepper. Put the cabbage rolls in a saucepan, pour over the sauce, simmer under the lid over low heat for 40 minutes. When serving, serve with chopped herbs.

Hundreds of original and delicious dishes representing various world cuisines are created on the basis of cabbage: from dietary cabbage soup to exquisite cabbage millefeuille. And one of the most useful gastronomic pleasures, of course, is sauerkraut.

- **How to quickly ferment cabbage?**

Instant sauerkraut (in 2 hours): you will need 2 kg of white cabbage, 200 g of carrots, 100 ml of vegetable oil. For the marinade: 1 liter of water, 100 g of sugar, 60 g of salt, 120 ml of 9% vinegar, 3-4 peas of allspice, bay leaf. Shred the cabbage. Add grated carrots, lightly rub with your hands. Pour in vegetable oil, mix. Boil water with salt, sugar and spices. Remove from heat and add vinegar. Pour the marinade over the shredded cabbage until completely covered. Put under oppression and withstand 2 hours.

- **Crispy sauerkraut**

For cooking you will need: 3 kg of white cabbage, 200-250 g of carrots, 60 g of salt, 25 g of sugar. Shred the cabbage. Add grated carrots, salt and sugar, mix gently. Place tightly in a container and put under oppression. Keep at room temperature under oppression for 3 days. Every day, having removed the oppression, pierce the cabbage mass with a long wooden handle to expel the accumulated air. Store cooked cabbage in the refrigerator.

- **Soaked cabbage with apples**

Ingredients: 4 kg of white cabbage, 3 kg of apples, 250-300 g of carrots, 50 g of sugar, 50 g of salt. For brine: 1 liter of water, 25 g of salt, 20 g of honey (boil water and dissolve salt and honey in it).

Chop the cabbage, add grated carrots, salt and sugar, mix (so that the vegetables let the juice out a little). Put apples and cabbage in several layers in a container. Pour warm brine, cover with large leaves of cabbage and place oppression on top. Cabbage, which will be ready in 2 weeks, store in a cold place. ^[12]

In cosmetology

In the formulation of cosmetics based on white cabbage, cabbage juice, brine, sauerkraut, whole or chopped fresh cabbage leaves are used.

- White cabbage face mask (for oily skin): Mix 2 tablespoons of cabbage leaves crushed into a pulp with beaten egg white. Apply to cleansed skin. Leave on for half an hour, then rinse with warm water.
- For oily skin, it is recommended to wipe the face before washing with a cotton pad dipped in sauerkraut juice. Rubbing with a lotion made up of fresh cabbage and cucumber juices, taken equally, is also useful.
- Cabbage mask for dry skin: apply cosmetic cream or nourishing cream to cleansed skin. Moisten a cloth with 100 ml of fresh cabbage juice, and, squeezing slightly, apply to the face. As the napkin dries, moisten the cloth evenly with juice. Keep the application for at least a quarter of an hour.
- With dry skin, a mask is also effective: mix the slurry of fresh cabbage leaves with egg yolk and vegetable oil (all ingredients in equal parts). Apply to face, wash off after 20 minutes with warm water.
- Whitening cabbage mask: To get rid of freckles and age spots, it is useful to wipe your face with sauerkraut juice daily.
- Nourishing face mask: mix half a yeast stick with honey and fresh cabbage juice (take a teaspoon), knead the composition until smooth, leave to ferment in a dark place. When the mass increases in volume by 2-3 times, apply to cleansed face for about half an hour. Rinse thoroughly with warm water. A mask of a thick layer of sauerkraut also tones and nourishes the skin (hold for 20 to 30 minutes, rinse with cool water).
- Hair balm with cabbage juice: for thin hair with split ends, mix in equal proportions juices - fresh cabbage, lemon and spinach. Rub the composition into the hair and scalp, hold for about 20 minutes and rinse with warm water.
- With rough, rough skin of the hands, baths from sauerkraut juice are useful. At the end of the procedure, grease your hands with a greasy cream. ^[four]

Combination with other products

Cabbage is a green and non-starchy vegetable. White cabbage goes well with vegetables of its type: cucumbers, bell peppers, onions, garlic, radishes, carrots, beets, young pumpkin. Cabbage is not

compatible with milk, but it works great paired with fats (for example, butter): a dish from such combinations is well absorbed. By itself, cabbage is a good side dish for a meat dish.

Beverages

Brine is prepared from cabbage, freshly squeezed juice, which is mixed with other juices and a vegetable cocktail is obtained.

Juice is squeezed from chopped leaves of fresh, ripe cabbage. Then filter and let it brew for several hours to clarify. The clarified juice is filtered again, very carefully, without shaking, and drunk both in its pure form and with additives.

Cabbage-beet juice

Table beets are washed, peeled, cut into several pieces, juice is squeezed with a juicer. Beetroot juice is mixed with sauerkraut juice (in a ratio of 3:2) and taken for therapeutic and prophylactic purposes.^[9]

Dangerous properties of cabbage and contraindications

Individual intolerance to vitamin U, isolated from cabbage, is a contraindication to the use of a drug based on it - methylmethioninesulfonium chloride.

Due to the possible increased gas formation, it is contraindicated to drink cabbage juice for patients diagnosed with myocardial infarction.

In order to avoid exacerbation, it is not recommended to take cabbage juice with increased acidity of the stomach.^[eight]

Botanical description

This is a vegetable crop of almost paramount importance (along with potatoes), widely spread due to its availability, universal taste and undeniable industrial importance.

White cabbage is classified by botanists as a variety of the species *Cabbage garden*, from the *Cabbage (Cruciferous) family*. The Latin generic name for cabbage is *Brassica*.

origin of name

The etymology of the Russian word "cabbage" is associated with the Latin noun *caput* ("head").^[one]

Story

In Europe, cabbage began to be grown about 3 thousand years ago (the botanical predecessor of modern white cabbage was a species with thick, fleshy leaves that can hold a lot of moisture). In Egypt, this vegetable was not cultivated until the Ptolemaic dynasty came to power. In the texts of the "father of botany" Theophrastus, there are references to cabbage, which allows us to conclude that it was known to the Greeks at least as early as the 4th century BC. e. In Cato's treatise "Agriculture" (2nd century BC), cabbage is already mentioned directly.

In Rome, cabbage was used in cooking, medicine and became one of the most sought-after vegetable crops. In his writings, Pliny the Elder already describes 7 types of cabbage known at that time.

Cabbage heads of the round shape known to us first began to be cultivated in England in the 14th century.

From Europe, cabbage migrated to America, India, Japan. In the history of navigation of the past centuries, this vegetable played an important role, since it was sauerkraut that became almost the only source of vitamin C, the reserves of which on board the ship were able to prevent scurvy. ^[2]

Varieties

Achievements in breeding provide gardeners and gardeners with a huge opportunity to choose varieties and hybrids of white cabbage. Varieties are usually divided into early-ripening, mid-ripening and late-ripening (sometimes early-ripening varieties are defined in a separate category). Early cabbage is good for salads, juicy and tender, but not suitable for long-term storage. Medium and late varieties are perfectly stored for a long time, they are used for making sauerkraut, pickled cabbage.

Growing early-ripening varieties, you can get two harvests per year. Popular varieties of early cabbage are "Golden Hectare", "Malachite", "Dawn", the middle one is "Dobrovolskaya", "Kupchikha", the late one is "Geneva", "Amager". There is also a selection of varieties for certain climatic conditions: the division into so-called regional varieties, the cultivation of which gives the highest yield in a particular region.

Some varieties of cabbage have become truly legendary and entered the world history of vegetable growing, such as the famous Saint-Saens variety, some specimens of which reached a weight of 20 kg, and the length of the largest leaves was up to 100 cm. Saint-Saens cabbage was in great demand in French market until the 19th century. Further, its popularity began to decline and since 1999 the variety was included in the Catalog of garden plants in France, where it was given the special status of an old variety, "recommended to amateur gardeners." ^[3]

Growing features

In the first year of cultivation, cabbage gives a dense head of cabbage, collected from fleshy and juicy leaves. The following year, the plant forms a stem with flowers collected in a brush. The fruits are elongated pods (up to 10 cm), the seeds are dark brown in color. Cabbage belongs to moisture-loving and moderately heat-loving plants (heat above 25 ° C has a bad effect on the vegetable - heads of cabbage often deteriorate and are attacked by pests). Abundant watering is necessary throughout almost the entire growing season. Soil preparation for cultivation is carried out in two stages: the first (to a depth of 0.25 m) and the second (spring, to a depth of 0.2 m) plowing the beds. Top dressing is also carried out in stages: for the first time, the soil is fertilized with a mineral composition two weeks after planting the seedlings. A higher yield of cabbage can be achieved if its so-called "predecessors" on the site were table carrots or early potatoes.

- How to deal with cabbage pests?

One of the most environmentally friendly methods is the treatment of seedlings with horse sorrel infusion. Pour three buckets of crushed sorrel with water in a garden barrel and cover with foil. After 10 days, collect the slurry formed closer to the surface of the water in a separate bucket. Spray the beds with cabbage with a prepared wormwood broom. This method reliably protects the cabbage from the cabbage butterfly. ^[1,9]

Selection and storage

The right choice will be not crumbling, hard forks (head) with intact and clean, strong and dense fresh leaves of white or light green color.

Fresh cabbage can be stored for a long time in the cellar or in the refrigerator. You should avoid storing the vegetable in open sunlight, as the leaves turn green in this case. In boxes, cabbage quickly begins to deteriorate. Damaged leaves should be noticed and removed in a timely manner. Outside the refrigerator, each head should be stored separately from the others, wrapped in thick paper. ^[4,9]

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White cabbage - useful properties, composition and contraindications

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Pumpkin (lat. Cucurbita)

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

Keywords: pumpkin , useful properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

Raw pumpkin contains (per 100 g): ^[5]					
Main substances:	G	Minerals:	mg	Vitamins:	mg
Water	91.6	Potassium	340	Vitamin C	9
Carbohydrates	6.50	Phosphorus	44	Vitamin E	1.06
Alimentary fiber	0.5	Calcium	21	Vitamin PP	0.600
Squirrels	one	Magnesium	12	Vitamin B2	0.110
Sugar	2.76	Sodium	one	Vitamin B6	0.061
Fats	0.10	Iron	0.80	Vitamin B1	0.050
calories	26kcal	Zinc	0.32		

- seeds

Pumpkin seeds (seeds) are no less valuable component of the fruit than the pulp. The composition of pumpkin seeds includes carotenoids , phospholipids, phosphatides , sterols, flavonoids , and various

vitamins. The oil, whose share is, on average, 35-40% of the seed, contains unsaturated, saturated and polyunsaturated fatty acids: stearic and palmitic (about 30% in total), linoleic (up to 40-57%), oleic (25-41 %) and others. Complete Composition of Pumpkin Seeds

- Peel

The chemical composition and physical properties of pumpkin peel are also very dependent on the variety and vary greatly, but there are general patterns. So, for example, in the peel of vegetables, as a rule, there are less sugars than in the pulp, but more dietary fiber and minerals. The content of β -carotene there may be even higher. The content of pectin substances is approximately equal in both the pulp and the peel - about 0.7-0.9%, as well as vitamin C (in the range of 1.4-13.3 mg/100 g) ^[10].

A characteristic property of the peel is that when it is dried to a level not exceeding 5-6% moisture content, the concentration of substances increases markedly.

In medicine

Pumpkin and pumpkin seeds are most often mentioned in the urologists, sexologists and andrologists ' repertoire . First of all, this is due to the high content of zinc in pumpkin seeds - an average of about 8-10 mg / 100 g. More precisely, 30 g of pumpkin seeds peeled from the pericarp (this is about 140-150 pieces) can contain from 15-20% up to 70-80% of the daily requirement of the male body.

Due to this, pumpkin seeds affect several body systems at once:

- participates in the synthesis of male sex hormones;
- activate spermatogenesis and promote the production of seminal fluid (in men after 44 years);
- normalize the function of the prostate gland;
- improve the condition of the cardiovascular system.

Pumpkin seeds, along with oysters (10-40 mg/100 g) and sesame seeds (7-11 mg/100 g), are among the top three foods with the highest zinc content, which is important because zinc not only synthesizes testosterone, but also prevents its conversion to estrogen. Together with lignan , which is also part of pumpkin seeds , zinc is able to suppress the development of prostate adenoma.

Pumpkin seed is a champion among products of both plant and animal origin in terms of the content of another element - L-arginine: 5300 mg / 100 g of product. French researchers studying the safe and effective combination of yohimbine hydrochloride with L-arginine glutamate to restore erectile function found the effectiveness of the combination and suggested that this is due to the ability of L-arginine to break down into nitric oxide, which leads to the expansion of blood vessels, including - and in the penis.

Also, pumpkin, on average, has 4-5 times more β -carotene than carrots. As part of the topic of male fertility, in a review of nutritional factors affecting male fertility, the positive role of β -carotene on progressive sperm motility and concentration was repeatedly noted. ^[15] , as well as their number ^[16] .

Finally, both the pulp and pumpkin seeds contain a large amount of vitamin E, known as tocopherol, which is translated from Greek as "bearing offspring." Studies have confirmed a reduced risk of asthenozoospermia (a pathological decrease in sperm motility) when eating foods with this vitamin (along with vitamins D and C) ^[17] .

Pumpkin seeds are generally widely used in pharmacology and dietary supplements . For example, in Pumpkin Seed (Pumpkin Seeds) in the appointment indicated a complex action of antiulcer ,

hepatoprotective (protecting the liver) and choleretic character. In addition, it is noted that the agent reduces the proliferation (growth of tissue, neoplasms) of prostate cells. Also mentioned are the anti-inflammatory effect and anthelmintic activity against tapeworms ^[18].

It is assumed that the main component that allows the drug to fight parasites is contained in the gray-green thin shell of pumpkin seed. For deworming, a decoction of 500 grams of unpeeled seeds (adult dose) is used, which is drunk on an empty stomach, and, 2 hours after ingestion, the esophagus is emptied with a saline laxative.

Interestingly, mild belching and sometimes diarrhea are listed as a side effect. But in the "homeland" of the pumpkin, the Aztecs used the seeds of the plant, mixed with the juice of yellow tomatoes, chilli peppers and cocoa, just to get rid of diarrhea. A mixture of seeds and pepper in combination with various herbs was used for "chest diseases".

Against parasites (round and tapeworms), pumpkin seeds, along with fern, were also used in folk medicine. At the same time, due to a lower activity than that of a fern, and also due to the absence of a side effect, the range of application was significantly expanded - drugs based on pumpkin seeds were given to children, the elderly, and pregnant women.

Pumpkin pulp in pharmacology is used less frequently and mainly as a source of carotene. In folk medicine, pumpkin juice and pulp are prescribed for metabolic disorders, diseases of the liver, heart, and also as a diuretic. For this, raw pumpkin is used: either half a kilogram of grated pulp, or half a glass of juice squeezed from the pulp. Thanks to the juice (0.5 cups / day), edema is removed, the functioning of the intestines improves, and it is enhanced by the removal of salts from the body.

In the 10th century, the so-called Byzantine agricultural encyclopedia was published, written in Greek under the name "Geoponics" ("geoponics" is the collective name of authors who had previously written on agronomic topics). In this encyclopedia, pumpkin juice is mentioned, which is dripped into the ears to prevent ear diseases. Avicenna had a similar recommendation. In addition, here the pumpkin was recommended to provide a "laxative effect."

Another "ancient" mention of pumpkin fruits used for medical purposes is contained in the 17th-18th century medical book, known under the abbreviated name "Vertograd Cool". The manuscript was translated into Russian from Polish for Princess Sophia, but later the information spread much more widely, and the clinic was used not only by healers, but also until the end of the 19th century by landowners engaged in self-healing at home. In this manual, the gourd fruit was recommended to those who, "from the great heat," the liver "swelled up or swelled up."

For external use, pumpkin juice compresses will be prescribed for burns, psoriasis, and dermatitis. With periodontal disease, pumpkin juice is advised to rinse the mouth.

In cosmetology

Once upon a time, pumpkin was recommended by the Aesculapius as a remedy for getting rid of freckles. In modern home cosmetology, you can also find recipes for lightening age spots using gruels based on crushed pumpkin seeds. To do this, take one tablespoon of seeds, mixing with the same volume of sour milk, teaspoons of lemon juice and honey, and leave for 15 minutes, after which it is washed off with cold water.

Japanese and Korean cosmetologists, known for their effective recipes for brightening creams and serums, should also use pumpkin extract for this. However, pumpkin extracts are not included in the

composition of the most famous lightening creams. And those cosmetics that were created on the basis of pumpkin extract are often positioned as moisturizing.

However, this side is also present in home cosmetology. In combination with yolk, honey and milk in equal proportions, raw pumpkin pulp is used in a nourishing mask for dry skin, and in combination with egg white - in a mask for oily skin.

Peeled seeds in gruel, when diluted with water in a ratio of 1 to 10, are also applied to the hair to eliminate split ends. To do this, after applying the mask, cover the head with a towel for half an hour, then washing it off with soapy water.

In scientific research

The richness of various vitamins and minerals makes pumpkin and its seeds a popular object of scientific research. To date, scientists have found out that the shell of pumpkin seeds is an effective anthelmintic agent ^[18], and the seed itself helps protect the body from the development of prostate adenoma, helps to increase the number and motility of spermatozoa ^[15].

In addition, pumpkin seeds are a source of magnesium. The researchers concluded that it is this mineral that makes the absorption of vitamin D possible. Without it, the vitamin can accumulate in the body, but does not have any positive effect. At the same time, it can be harmful, since the use of special vitamin supplements can lead to an uncontrolled jump in the level of calcium and phosphorus ^[21].

Zinc, found in pumpkin seeds, helps prevent the development of esophageal cancer. American scientists have found that the same dose of zinc has a detrimental effect on cancer cells, but does not affect other cells in the body. Researchers explain this phenomenon with a special bond between zinc and calcium. The nature of this connection has yet to be established, but it is already clear that zinc responds to calcium signals "sent" from cancer cells ^[22].

Scientific experiments show that pumpkin pulp can also contribute to the fight against cancer. Its high content of beta- cryptoxanthin (provitamin A) helps prevent the development of lung cancer. During experiments on mice, scientists were able to establish that the effect of a nicotine derivative of a carcinogen contained in some types of tobacco and liquids for electronic cigarettes is neutralized due to small doses of provitamin A ^[23].

Scientists are also conducting research that may in the future help to cope with one of the main ophthalmological problems of our time - age-related macular degeneration. This may be possible due to the presence of a carotenoid in the pumpkin pulp . zeaxanthin ^[24].

In domestic studies, scientists pay special attention to the regenerating activity of pumpkin oil extract. The 50% oil extract was found to be the most effective, which, when used daily, reduced the half-healing time of wounds in animals by 22% ^[25].

In addition to the direct beneficial effect on the body, pumpkin also has an indirect effect on human health. So, researchers from the USA found that dry pumpkin peel and seeds are an effective water purifier. After boiling and drying, they were placed in water with lead ions, which, within a few hours, were almost completely absorbed into the "organic filter". And in combination with the peel of avocado and lemon, the effectiveness increases. Such an inexpensive and simple method of purification can be a real salvation for third world countries in which there is a shortage of drinking water ^[26].

Weight regulation

Nutritionists sometimes refer to pumpkin as the perfect vegetable. The well-known Ukrainian nutritionist Oksana Skitalinskaya in her nutrition programs relies on the opinion that the work of the gene program depends on the human diet: some products, which include pumpkin, can turn on and off hereditary factors. Pumpkin in this context is used by a nutritionist to achieve an antitumor effect, and also as an element of diets for gastritis and gallbladder diseases. O. Skitalinskaya and the effect of pumpkin on metabolism are noted. According to the nutritionist, pumpkin in the diet normalizes metabolism, helping the fat to lose weight, and the thin to gain weight.

Pumpkin is part of the "olfactory" diet of Dr. (psychiatrist) Alan Hirsch, who since 2005 has been studying the effect of odors on human consciousness and physiology. The weight management program is based on the assertion that some food odors "beat off" the appetite and slow down the process of secretion of gastric juice. Unlike, for example, the aroma of green apple, mint, banana and 12 other odors, the aroma of pumpkin does not reduce appetite, but is used in the first phase of the diet, during which the patient learns not to mix odors in the diet.

As a "starch-free" vegetable, pumpkin is also included in the famous, albeit partially outdated Montignac diet. The principles of nutrition of the French doctor were based on the idea of normalizing metabolic processes by introducing certain restrictions on the combination of products. For example, the diet forbids mixing fats and carbohydrates "on the same plate." Moreover, according to Montignac, "positive" carbohydrates, including those contained in pumpkin, can and should be eaten, but "negative" ones (sugar, alcohol, confectionery, etc.) cannot.

A study by the USDA confirmed the suggestion that diets high in pumpkin may reduce appetite due to the high fiber content. Pumpkin itself is a low-calorie food (a standard cup of boiled pumpkin puree contains about 50 calories). In addition, in dishes with pumpkin, people "took" less fat and calories from the rest of the food.

When preparing fresh juices, pumpkin is often combined with other vegetables, such as carrots. However, to improve the taste of the drink and, most importantly, to improve the absorption of β -carotene and the dissolution of vitamins, a little cream is added to a glass of squeezed juice. The fat contained in them helps to assimilate useful elements.

In cooking

Almost everything that is in the pumpkin, including flowers and leaves, is used by culinary specialists in cooking. For example, battered pumpkin flowers are considered a traditional Italian dish. Cream soup and porridge are made from pumpkin.

The most honorable place is occupied by a pumpkin dish in Armenian cuisine. There is a tradition here for weddings and other festive events to cook pumpkin stuffed with rice, nuts and dried fruits. This dish is called "Ghapama".

For Ghapama, the top of the fruit with the tail is cut off so that the separated part resembles a lid. The pulp and seeds are removed, and the resulting cavity is smeared with honey and cinnamon and sent for 1 hour to the oven for baking until the crust is browned and the pulp is softened. Toasted dried fruits and butter-fried nuts are mixed with rice and laid out in prepared pumpkin layers, each of which is smeared with honey. Closed with a "lid" and smeared with butter, the fruit is brought to full readiness in the oven for about 40 minutes.

For one medium-sized pumpkin, you need 1 cup of rice, 100 grams of almonds, walnuts and honey, a handful of prunes, raisins and dried apricots, 50 grams of butter and a teaspoon of cinnamon.

An important culinary feature of pumpkins is their ability to almost completely retain their beneficial properties even after heat treatment. Scientists from the Institute of Guadalajara analyzed all types of cooking of pumpkins to determine which cooking method reduces or increases the useful properties of this vegetable. According to Institute Fellow Jessica Del Pillar Ramirez Anayat, even frying is harmful only because excess oil remains on the product. If the oil is allowed to drain after cooking, the benefits of pumpkin dishes are guaranteed to outweigh the potential harms of frying. In addition, the use of oil also improves the absorption of β -carotene^[3].

Dangerous properties of pumpkin and contraindications

The harmful properties of pumpkin are very rarely spoken about and, mainly, either in connection with abuse or in connection with the nitrate threat. Pumpkin can indeed accumulate nitrates, especially in industrial production in countries where fertilizers and pesticides are actively used in agriculture. But even according to this indicator, pumpkin is not among the products with the highest ability to accumulate harmful substances, representing an "average" risk group with a nitrate content of about 300-600 mg/kg, with a maximum allowable value of about 500 mg per day. (The upper limit of the norm is about 5 mg per kilogram of human weight).

However, raw pumpkin should not be consumed by people with exacerbations of inflammatory processes in the stomach, pancreas, gallbladder and intestines. Individual medical advice should be obtained by patients with gastritis with low acidity, intestinal colic, high blood sugar.

With pumpkin juice, as with any other, restraint should also be exercised. According to some nutritionists, 1-2 glasses per week are enough for an adult.

origin of name

The word "*pumpkin*" (according to the dictionary of the Russian linguist Lev Uspensky, as well as the dictionary of the German linguist and Slavist Max Vasmer) has two main versions of origin. According to the first version, "*pumpkin*" is a derivative of the common Slavic word "tyky" ("fat"), which, in turn, is associated with the word "tykati" - "to get fat". According to another version, the word became a borrowing from the Pelasgian-Francia language, going back to the Indo-European "kūkū", which translates as "puffy fruit". This etymology is also considered possible in the Dictionary of Nikolay Shansky.

Story

Archaeological finds made in the Oaxaca Valley on the territory of modern Mexico indicate that people were engaged in growing pumpkin fruits for seeds, pulp and materials for household items, according to various sources, as early as 5.5-8 thousand years ago^[1]. On the territory that belonged to the Aztecs, this vegetable was discovered for the first time in the history of modern Europe by adventurers and colonists who arrived in America from the Old World, who quickly introduced the homeland to the new plant. The liturgical book of 1505 known as Anna of Brittany's Book of Hours contains an ornamental but realistic depiction of gourd stems, flowers and fruits. But, judging by the Byzantine references to pumpkins in the sources of the 10th century, people in the Old World knew about this vegetable long before the voyage of Columbus.

In European scientific literature, the pumpkin was first described in the middle of the 16th century in the fundamental works of the Franciscan monk Bernardino de Sahagun, who in 1529 left on an

educational mission to the New World, where, among other things, he studied the nature of the continent, the social structure of the Aztecs, their science and culture. A number of books of his scientific treatise Bernardino de Sahagun devoted to the issues of medicine and botany, describing, among other plants, pumpkin as an object of culinary interest of the natives, as well as a raw material for the manufacture of medicines of local medicine ^[2].

In the same 16th century, the “American” pumpkin appeared in the Old World, quickly spreading throughout Europe (except for the northern countries) and Asia. By the beginning of the 17th century, the vegetable began to be considered as a food crop. Around the same time, pumpkins began to be grown in Russia, which today is among the five most productive producing countries. The first place in the ranking with a large margin from other countries is occupied by China (about 28.7% of the global market), India is in the second place (19.7%), Russia is in the third place (4.8%), Ukraine is in the fourth place (4.3%), on the fifth - the USA (3.4%). Northern Europe and Great Britain, due to the rather long growing season of pumpkins, are less suitable for growing this crop for climatic reasons.

Despite the distribution of fruits in Europe, mass production of pumpkin seed oil began quite late - only by the beginning of the 18th century. The first known mention of it dates back to 1739. In inheritance documents found in Austrian Styria (federal lands in the southeast of the country), bequeathed 14 pounds of butter, which in this region is sometimes still called "green gold", is mentioned.

Maria Theresa of Austria, Archduchess of Austria and Queen of Bohemia and Hungary, a few years before her death in 1773, as part of a project to reform various economic sectors, ordered the use of pumpkin seed oil not as a food product, but as a medicinal base for ointments. In the same years, the possibility of using this product in military affairs was also considered.

Varieties

Pumpkin is an annual plant with a branched taproot, a long (up to 8 meters) stem and large (up to 25 cm) leaves covered with stiff hairs. The fruit of the plant belongs to the berries and is a spherical or oval pumpkin with a predominantly smooth skin. “Pumpkins” are all fruits of the Pumpkin family, but, depending on the variety, they can vary greatly in shape, size, weight, color, chemical composition, peel thickness, number of seeds, yield, etc.

Breeders count a different number of pumpkin varieties, but, in any case, the score goes to at least dozens. Most often, all varietal diversity is divided into three types:

- Large-fruited.

This species is represented not only by the largest, but also by the sweetest fruits. The sugar content of a number of varieties can reach 15%, which exceeds, for example, the sugar content of sweet watermelon. Such pumpkins tolerate temperature changes better than others and are perfectly stored without cellars in an apartment.

- Hardcore .

The fruits of this species differ not in size, but in a thick coarsened crust. Hard -skinned cucurbits include squash (with disc-shaped, flattened fruits) and squash (with elongated fruits). It is believed that it is varieties of hard-skinned pumpkins that have the most delicious seeds. Pumpkins of this species ripen early - already in late August - early September.

- Muscat.

Muscat pumpkins are considered the most useful and tasty. Their main disadvantage is thermophilicity combined with late ripening. In central Russia, such pumpkins may simply not have time to ripen. Therefore, in more northern regions, they are grown through seedlings and, in case of adverse weather conditions, are removed unripe. Butternut squash can also ripen outside melons.

When choosing fruits, you need to understand what type this or that variety belongs to, because some fruits are more suitable for preparing a certain dish at a certain time, while others are less. For example, lovers of pumpkin juice and baked vegetables are better off choosing nutmeg and large-fruited varieties.

Selection and storage

The preferences of one or another type of pumpkin when choosing depends on the goals. Very often, gray and outwardly less presentable vegetables are tastier and healthier than large, richly colored fruits. Therefore, when choosing, they are guided not so much by the “ripe” look, but by prescription requirements. For summer dishes with boiled, stewed or fried pulp, hard- bark varieties are usually chosen, for baking pulp - nutmeg and large-fruited, for laying in raw salads - sulfur- fruited sweet varieties, for making fresh - any nutmeg varieties of culture.

It is believed that a ripened pumpkin, after being removed from melons, can be stored for up to 2 years. Such an opinion was expressed, for example, by an employee of the All-Russian Research Institute, the head of the department of selection of gourds, Sergey Sokolov ^[3]. Much in this matter depends on the quality of the fruit, the variety and the conditions in which the fruit is placed, but at a temperature of 6-8 C and an air humidity of 75-80%, most varieties can lie for at least 2 months to a year. However, during this period, the chemical composition of the pumpkin can change significantly.

A group of Russian scientists conducted a study of the quality of fruits of 6 different varieties depending on their shelf life and came to the following conclusions ^[4]:

- Pumpkin carbohydrates during storage are subject to the most significant changes.
- In the first 1-2 months, during ripening, pumpkin accumulates monosaccharides with an increase in their level by 1-5% (depending on the variety).
- During the first 2 months, the starch content is reduced by 30-40%.
- The solids content decreases gradually and slowly (from the range of 8.4-20.2% to the range of 7.5-19.6%, respectively).
- The amount of carotenoids (fat-soluble plant pigments) almost doubles, which is associated with a restructuring during storage of their structure.
- The indicator of accumulation of carotene in the pulp during ripening correlates with an increase in the level of sugars and an increase in the activity of such enzymes as polyphenol oxidase and ascorbine oxidase . At the same time, the content of carotene in the pumpkin bark almost always decreases. When fruits are stored for 3 months, the concentration of carotene in all varieties decreases (by 51-85%).
- Despite the fact that the placenta (about 10% of the mass of pumpkin) is discarded during processing, it is in it that the highest concentration of carotene is noted with a tendency to increase it in the placenta by 45-87%.

The general conclusion in this study was that for consumption both processed and raw, it is better to store pumpkin for no more than 3 months. After this period, the pumpkin does not deteriorate, but the quality of the fruit is still noticeably reduced.

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Pumpkin - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of pumpkin 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 are indicated, the use of pumpkin in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of pumpkin on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With her application.



Apple (lat. *Malus domestica*)

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

Keywords: apple , useful properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

Main substances (g / 100 g):	Fresh Apple Golden : ^[6]
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Water	85.81
Carbohydrates	13.6
Alimentary fiber	
Squirrels	0.28
Fats	0.15
Calories (kcal)	57
Minerals (mg/100 g):	
Potassium	100
Calcium	6
Phosphorus	ten
Magnesium	5
Sodium	2
Vitamins (mg/100 g):	
Vitamin B4	5.1
Vitamin E	0.18
Vitamin B3	0.094
Vitamin B 5	0.074
Vitamin B 6	0.051

The chemical composition of apples is different for fruits of different varieties, it is determined by the degree of maturity, the conditions in which the apple tree is cultivated, depends on the shelf life and other factors. The amount of water in fruits can vary from 84 to 90%, sugars - from 5 to 15%, fiber - from 0.59 to 1.38%, and tannins - 0.025 to 0.27%. ^[3]

Medicinal properties

Medicinal plants include forest apple. Its fruits contain carbohydrates: phytoglycogen , pectins; organic acids: malic, tartaric, citric; carotenoids , vitamin C, chlorogenic acid, tannins, catechins, flavonoids , anthocyanins, leucoanthocyanidins , essential oil, organic compounds of iron and phosphorus. The composition of the leaves includes dihydrochalcones : phloretin , phloridzin ; flavonoids : hyperin , quercetin , quercitrin , isoquercitrin , rutin, naringenin ; catechins, ascorbic acid.

Tea from the fruits of the forest apple tree is prescribed for urolithiasis, gout, rheumatism, cough and hoarseness, gastric catarrh and colitis. Baked apples are recommended for chronic constipation. Fresh apples are indicated for gastritis with low acidity (hypoacid gastritis), spastic colitis, biliary dyskinesia of the hypokinetic type, and beriberi. Externally , freshly grated apples are used to treat abrasions, burns, frostbite, ulcers that do not heal for a long time, cracks in the nipples in nursing. In dermatology, apple applications are used for inflammatory skin diseases. A decoction of apple leaves is used as a source of vitamin C. ^[8]

In medicine

Extractum is made from the fruit of the wild apple tree. *ferry pomati* . Malic acid extract is prescribed for hypochromic anemia.

In folk medicine

With urolithiasis, gout, rheumatism, catarrh of the stomach, colitis, cough and hoarseness, tea from the fruits of the wild apple tree is useful: 10 fruits are crushed and boiled in a liter of water for 10 minutes. Honey or sugar is added to taste.

In case of hypovitaminosis, for the prevention of beriberi, a decoction is prepared from the leaves of the forest apple tree: finely chopped raw materials are poured with water (1 part of the leaves of the apple tree and 4 parts of boiling water) and boiled for a quarter of an hour. Filter and take a dessert spoon three times a day.

With dysentery, vomiting, you need to eat several sour fresh apples during the day.

A recipe is used as a mild laxative: cut two medium apples into slices, pour 200 ml of milk and 100 ml of water. Cook over low heat for at least 5 minutes. Let it brew. Take in the morning on an empty stomach.

Popular in folk medicine are products based on apple cider vinegar. Among them are apple cider vinegar treatment regimens and recipes according to the system of D. Jarvis, B. V. Bolotov .

Externally:

With increased sweating of the palms, baths with the addition of a few teaspoons of apple cider vinegar are recommended.

Brittle nails are treated with baths of vegetable oil and apple cider vinegar (1:1). The duration of the procedure is 10 minutes.

From cracked heels, the following drug helps: an apple is boiled in milk and ground into a pulp. The resulting mass is spread on the damaged areas, covered with a clean cloth and kept for half an hour.

An ointment of pureed apples and softened butter is used for cracked lips, for healing wounds and scratches.

True warts are rubbed with a fresh cut of an apple for several minutes up to 6 times a day for a month.
[5,8]

in oriental medicine

In the ancient "Canon of Medicine" by Avicenna, recommendations for the daily use of apple fruits are preserved: the famous healer highly appreciated the healing potential of apples.

In the medical system of Tibet, the apple is called Kushu . Tibetan healers attribute to the fruit the functions of reducing gas formation in the intestines and point to the absorbent properties of the apple.

Chinese medicine, which classifies foods according to the degree of Yin and Yang they contain , defines an apple as a product with a predominance of Yang and designates its coefficient as "+2".^[9]

In scientific research

Apple against cancer: do apples help fight cancer? Yes, the use of apples in cancer therapy is not unreasonable, according to research from the University of Cornwall. For more than 3 weeks in laboratory conditions, it was found that the condition of experimental animals with a breast tumor improved by 17% in the group that received a daily dose of one apple, and by 30% in that part of the study animals that received an apple per day. three times more extract.^[ten]

A direct link between the use of apples and the prevention of cancer was also shown by tests conducted on humans. According to the results of a study by Boyer J., Liu R. (2004), the inclusion of

one or more apples in the daily diet of patients reduces the risk of developing various types of cancer, as well as the occurrence of cardiovascular diseases. ^[eleven]

Weight regulation

Apples do not contain saturated fats and cholesterol, and therefore are an excellent food for heart patients and those suffering from obesity. Apple diet can reduce blood cholesterol levels by 30%. Apple varieties (sour), in which a small amount of sugar is useful for patients with diabetes. ^[5]

In cooking

Apples are a unique product used in desserts, second courses, pastries, salads, sauces. The bird is stuffed with apples; they are baked with meat or fish; stew with vegetables; fried with liver; add to the herring in mincemeat. Apples are delicious in casseroles, pancakes, cheesecakes, cereals and puddings. Apples are pickled, dried, soaked apples are harvested for future use.

Fruit soups made from apples are useful (as a mono-variation or with the addition of other fruits). They are prepared on the basis of applesauce from baked apples, juice or pureed raw fruits. Served with honey, sour cream or cream.

Soft and sweet varieties of apples are suitable for making jams, marshmallows, marmalade. When baking, the culinary specialist prefers hard and green apples with a dense peel. Such fruits do not add excess moisture to the dough and it does not have to be further thickened. ^[3]

Apple recipes:

- Tufakhia

This is a Bosnian dessert (apples stuffed with nuts and raisins).

You will need: 4 medium hard apples, 2 cups sugar, 3 cups water, juice of half a lemon, half a cup of shelled walnuts, a tablespoon of raisins, whipped cream for serving.

Prepare syrup in a deep frying pan or saucepan: bring water to a boil, add sugar and add lemon juice. Peel the apples, make a hole in the place of the stalk and carefully cut out the core. Dip the whole apples into the prepared boiling syrup and cook for 5 to 10 minutes (the finished apple should be easily pierced with a fork, while remaining whole). Remove apples from syrup and let cool. Put the peel of apples into syrup and boil over low heat for about 20 minutes, until the volume of liquid is reduced by half. Drain remaining syrup and refrigerate. Grind nuts and raisins, mix. Stuff apples with walnut-raisin filling, pour over them with cooled syrup and garnish with cream. ^[12]

- apple chutney

Chutney is a traditional Indian sauce, often very hot and spicy, cooked from vegetables or fruits.

You will need products: 30 medium-sized sweet and sour apples, 60 g salt, 300 g cane sugar, 100 g onions, 1 clove of garlic, 80 g ground ginger, 14 g dry chili peppers, 28 g mustard seeds, 100 g raisins, 900 ml of vinegar.

Peel apples, seeds, cut into slices, put in a deep saucepan, add sugar and vinegar, and boil until the apples soften. Soak mustard seeds in vinegar, then dry thoroughly. Crush the raisins. Cut the peeled garlic and onion into slices, mix with chopped chili, ginger and mustard seeds and grind everything in

a mortar. When the apples are boiled, combine all the ingredients with the apple mass, mix well and let cool. Divide into jars and store in the refrigerator. Apple chutney is served with fish, poultry, pork, rice, flatbread or homemade bread.

In cosmetology

Cosmetic recipes use apple peel, apple juice or fruit pulp.

- Apple hair mask

Peel and seeds 2 large apples, mash them. Mix applesauce with 2 tablespoons of apple cider vinegar, a teaspoon of lemon juice and a tablespoon of cornmeal, bring to a homogeneous state. Apply the mixture to dry hair and leave the mask on for half an hour. Rinse with warm water and then wash and dry your hair as usual.

- Apple face masks

Apple mask for normal skin: grate the peeled apple on a fine grater. Mix grated apple with a teaspoon of sour cream (or any vegetable oil) and the same amount of starch. Apply a homogeneous mixture on the face and neck for 20 minutes. Wash off with warm water.

Vitaminizing mask for any type of skin: apply gruel from a grated apple to the face, hold for a quarter of an hour and rinse with cool water (if the skin is dry, apply a little softening cream on the face first).

- Rejuvenating mask

Boil the apple in a small amount of water, puree, mix with a couple of drops of olive oil and a teaspoon of honey. Apply to cleansed face for 15 minutes.

For facial skin care in the cold season: prepare a mask from a tablespoon of oatmeal, the juice of one apple and a small amount of milk. Apply to face and neck for 30 minutes, then rinse with warm water.

- apple mask for dry skin

Mix an apple pounded into gruel with a teaspoon of honey and a tablespoon of chopped oatmeal. Apply to the face, hold the mask for a quarter of an hour, rinse with warm water.

Combine 2 teaspoons of cottage cheese with a teaspoon of apple juice, half the yolk and a teaspoon of camphor oil. Apply to face, hold for 15 minutes. Rinse first with warm, and then with cool water.

- apple mask for oily skin

Mix a tablespoon of baked apple puree with a tablespoon of whipped protein. Keep the mask for at least 15 minutes, then rinse with cold water.

Grind the apple and boil a tablespoon of raw apple for a couple of minutes in 40 ml of milk or cream. Let it brew for half an hour. Add whipped protein to the mass. Apply to face and wash off with cool water after 15 minutes. ^[5]

Combination with other products

In a culinary sense, an apple works well paired with semi-acid and sweet fruits, citrus fruits, carrots, fermented milk products (yogurt, kefir). A good compatibility of an apple with meat and protein products enriched with fats: cheese, full-fat cottage cheese, nuts. But starchy foods in combination with an apple cause fermentation.

Beverages

Tea, kvass, juices, cocktails, punches, fruit drinks are prepared from various varieties of apples (with the addition of other components). Apple juice perfectly quenches thirst, acts as an aperitif. It is drunk neat or mixed with a variety of fruit or vegetable juices (carrot, tomato, pumpkin, parsley or celery juice). Compotes are made from fresh and dried apples. Some varieties of apples boil quickly, so you don't need to boil them, but you should put them in boiling syrup and cool them right away. Apples are used in the basis of both non-alcoholic and alcoholic drinks (calvados, apfelwein).

- Kvass from fresh apples

To prepare kvass, you will need: 15 medium-sized sour apples, 2.5 cups of sugar or honey, half a glass of blackcurrant juice, 2 tablespoons of raisins, 20 g of yeast, a tablespoon of ground cinnamon, zest of one orange and lemon, 5 liters of water.

Peel the apples from the core, chop together with the peel, add water and cook for a quarter of an hour. Then strain and let the broth cool down to 20 °C, add sugar or honey, yeast, cinnamon, citrus zest, currant juice, raisins and leave in a warm place for 2 days. After kvass pour into bottles and store in a cool place. Serve with crushed ice.

- Apple bowl

Ingredients: 1.5 kg of sweet apples, 2 lemons, 2 liters of cold strong tea, 2.5 cups of sugar, a bottle of champagne. Peel the apples, cut into quarters, cut out the seeds, then chop into thin slices, put in an enamel pan, squeeze the juice of 2 lemons and the grated zest of half a lemon, pour in chilled strong, freshly brewed tea, add sugar, mix, cover and leave in cold place for 5 hours. Before serving, transfer the mass to a bowl and pour champagne over it.

- apple cider

Ingredients needed: 10 apples, water, $\frac{3}{4}$ cup sugar, a tablespoon each of powdered cinnamon and ground allspice.

Cut the apples into quarters, remove the core. Put the prepared apples in a saucepan, pour water so that it covers the apples by about 5 cm. Pour in sugar, cinnamon and allspice. Bring to a boil and cook over medium heat, uncovered, for 60 minutes. Then cover with a lid and boil over low heat for another 2 hours. Let cool and strain. Ready cider to keep in the refrigerator.

- Apples in winemaking

The best varieties for winemaking are apples of autumn and winter varieties: the level of sugar, tannins and acids contained in them is higher than in summer varieties. Excellent wines are obtained from the varieties *Antonovka*, *Parmen winter gold*, *Slavyanka*, *Anis* . Exquisite wine is made from the summer variety *Grushovka Moskva*. Excellent quality wines can be obtained from Chinese and ranetki, but given the high acidity of these apples, the juice of their fruits should be diluted with water or the juice of sweeter apple varieties. The blends use the juice of wild apples.

Apple wines tend to lose flavor and freshness during storage, so they are best consumed in the year they are made. This does not apply to the wine product from ranetki and kitayek: in view of their astringency, these wines should be aged for at least 2 years. During this period, their taste softens.

best to use apples for making semi-sweet or dry wines. ^[13]

Other uses

- An apple successfully replaces toothpaste with a brush: after eating a fresh hard apple, you can not only have a snack, but also brush your teeth. The fruit used for this purpose should be quite hard, sweet and sour.
- The skin on the hands that has darkened from kitchen chores can be bleached and cleaned with an apple peel.
- The ability of apples to remove radionuclides justifies one of the ways to "cleanse" food: to reduce the radioactivity of a food product, it can be covered with layers of thin apple slices and left for several hours (from 3 to 6). The readings of the instruments indicate that the radiation background of the product after such a procedure is reduced.
- Many types of apple trees are highly productive honey plants. Apple trees of certain species and varieties have an ornamental value. In turning and carpentry, apple wood has found wide application: the material from it is strong and dense, easy to cut and polish.
- Apples are great craft material. You can create funny animals out of them, make stencils for color printing from apple halves, cut out a recess in the fruit and get original decorative candlesticks for pillar candles. ^[1,5]

Dangerous properties of apples and contraindications

- Sour varieties of apples are forbidden for those who suffer from stomach and duodenal ulcers and hyperacid gastritis (gastritis with high acidity).
- Fresh sweet apples and undiluted apple juice can help raise blood sugar levels. Therefore, they should be used with extreme caution by those diagnosed with diabetes.
- Apple seeds contain cyanide and are poisonous. But the amount of poisonous substance in the seeds per one apple is negligible. A full cup of apple seeds can be considered a lethal dose for a person.
- An apple can cause an allergic reaction in individuals with individual intolerance (allergies in patients can be provoked not only by an apple, but also by other members of the Rose family: apricot, plum, peach, almond, pear).
- Drug Interactions: Apple juice reduces the body's absorption of the antihistamine fexofenadine, reducing its effectiveness. ^[fifteen]

Botanical description

In a botanical aspect, *an apple* is the fruit of an apple tree (tree or shrub), a representative of the tribe *Apple*, subfamily *Plum*, family *Pink (Rosaceae)*. The name of the genus *Apple tree* in Latin - "**Mālus**" - according to one version, goes back to borrowing from Greek (gr. "**mêlon**", denoting both "*apple*" in particular, and any fruit).

origin of name

The word "apple" in Russian, according to a group of linguists, originates from the Indo-European "*albho*" - ("*white*"). A less popular version connects the etymology of the word "apple" with the ancient city of Abella (Campania region in modern Italy), famous for its apple harvests.

Within the genus, there are 62 species of apple trees. Among them, the following species are the most common and significant in terms of the degree of use in various industries or are the ancestors of modern varieties: domestic (cultivated), forest (wild), low, pubescent, Caucasian (eastern), Alma -Ata (Siversa), plum -leaved (Chinese) , Siberian berry. ^[1,2]

Story

The apple tree has been a companion of mankind since time immemorial. The homeland of the wild apple tree is considered to be the Tien Shan mountains in the south of Kazakhstan.

It is believed that the apple tree appeared on the territory of Europe thanks to the Greeks, who developed intensive trade and business relations with the most distant peoples. Over time, a wild-growing apple tree was cultivated by man: the best samples were selected, growing conditions were improved.

In the 4th century BC. Theophrastus describes apple varieties bred by gardeners and the most popular in Hellas. Later, the Romans Cato , Varro , Callumella , Pliny and Virgil already named 36 apple varieties in their writings, indicating the techniques for grafting cultivated fruit plants.

The apple culture migrated to the population of the Western European region from Ancient Greece and Rome. By the beginning of the 16th century, the development of this branch of horticulture accelerated. Less than a hundred years later, in Europe, a detailed description of already 60 varieties of apple trees was given, among them those that are cultivated in our time: Stettin red, Calvil white, Short-legged red, Star-shaped.

The apple tree came to the eastern and southern Slavs in the 10th century through another intermediary - Byzantium. The cultivation of apple trees was given increased attention in the Kiev principality, the apple orchard founded by Anthony of the Caves (1051) was widely known. In the 12th century, Yuri Dolgoruky initiated the laying of apple orchards in the Moscow region. Apple culture entered a new round of development under Peter I. The 18th century was marked by the discovery of the science of pomology and the activities of its founder A.T. Bolotov , a detailed study of the varieties of apples and pears known at that time. Years later, the works of Michurin I.V. were devoted to the breeding of new varieties.

Varieties

There are more than 10 thousand varieties of apple trees. All their diversity is divided into summer, autumn, winter and late winter varieties.

Summer varieties include: Grushovka Moscow, Melba , Papirovka .

Velvet, Bessemyanka Michurinskaya, Borovinka, Cinnamon striped, Shtreifling , Kitaika form a group of autumn apple varieties.

Winter varieties of apples: Antonovka, Minskoe, Slavyanka, Welsey , Delicious , Jonathan.

Varieties Aurora Crimean, Babushkino, Bananovoe, Golden Delicious , Saltanat , Boyken are considered late winter varieties. ^[3]

Growing features

For planting apple seedlings choose a sunny area. Light requirements come down to a simple rule: trees should receive a portion of direct sunlight for at least 6 hours a day. The distance between individual planted trees is from 4.5 to 5.5 m. Before planting, it is necessary to make sure that the seedlings do not fall into the so-called "frost pocket" - a low-lying fragment of the site in which cold air usually settles.

You should also clear the soil: remove weeds and grass. If the roots of the seedling have dried up, on the eve of planting they need to be fed with water. Young apple seedlings are planted in autumn (second half of October) or early spring. The planting hole is dug up to 0.6 m deep, the width is calculated as follows: the approximate diameter of the root system of the seedling is doubled. Top dressing with fertilizers during planting is possible, but without the use of nitrogen fertilizers and lime, as they cause burns to the root system. After planting and backfilling the planting pit, the stem of the seedling is fixed at the peg support. Form a hole and water abundantly. Then mulch. Pruning of young apple trees is carried out annually in the spring (on the first, second, third, fourth and fifth year after planting). Watering seedlings is rare, but plentiful. According to the schemes for the years of planting, top dressing and preventive spraying are carried out. ^[four]

picking apples

There are two degrees of fruit maturity: removable (botanical) and consumer (edible). The removable maturity of the fruit coincides with the completion of growth processes and the accumulation of nutrients in the pulp of apples. The fruit no longer grows in size and is easily removed from the branch. The consumer maturity of the fruit is determined by the moment of manifestation in the apple of the aroma, taste and color inherent in this particular variety. These two degrees of maturity occur simultaneously in summer varieties. In autumn and winter varieties, removable maturity is ahead of consumer maturity by a month or more. The harvest of summer varieties is timed to the stage of consumer maturity of the fruit. Eating apples of autumn and winter varieties must be strictly timed: too early harvesting does not leave time for the sour fruits to "ripen", and untimely belated harvesting leads to the fact that apples become unsuitable for long-term storage. It is wrong to pick apples by shaking or knocking them off the tree. The apple must be carefully removed into the branches, without damaging the stalk. ^[3]

Selection and storage

A ripe apple, in the process of growing which was done without the use of nitrates, has a pronounced aroma. The color of the fruit also matters: the apple should not be "colored" uniformly. If the surface of the apple (peel) feels slippery, sticky, or feels wet, this is a sign that the fruit has been treated with chemicals. When buying, you also need to sort out apples with small brown spots. A soft skin that easily leaves dents or a partially wrinkled skin indicates that the fruit is beginning to wither and lose its juiciness: the taste characteristics of such fruits have already deteriorated significantly.

Fresh apples are stored in the refrigerator. At room temperature, the fruits can also last long enough if you put them in a plastic bag and periodically (once every 7 days) sprinkle with water. Summer varieties, under the most optimal storage conditions, remain fresh for about 3 weeks. The shelf life of autumn and winter varieties is from 60 days to six months.

The pulp of an apple is a comfortable environment for the reproduction of microorganisms, the only barrier for which is a whole and intact peel. If the fruit is spoiled and begins to rot, it must be immediately transferred to a separate container, since rotting can spread to healthy fruits. ^[3,5]

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Apple - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of an apple 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 fruit are indicated, the use of apples in various types of medicine and the effectiveness of their use in various diseases are considered. The potentially adverse effects of apples on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With them application.



Carrot (lat . *Daucus carota* subsp. *sativus*)

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

Keywords: carrots , useful properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

100 g of fresh carrots contains: ^[5]					
Main substances:	G	Minerals:	mg	Vitamins:	mg
Water	88.29	Potassium	320	Vitamin A	10.02
Carbohydrates	9.58	Sodium	69	Vitamin C	5.9
Sugar	4.74	Phosphorus	35	Vitamin PP	0.983
Alimentary fiber	2.8	Calcium	33	Vitamin E	0.66
Squirrels	0.93	Magnesium	12	Vitamin B6	0.138
Fats	0.24	Iron	0.3	Vitamin B1	0.066
calories	41kcal	Zinc	0.24	Vitamin B2	0.058

Carrots are a healthy non-calorie vegetable that contains a large amount of vitamins and minerals necessary for the body to function properly. Vegetables are useful to use, both raw and boiled.

Contrary to popular belief, heat treatment does not deprive carrots of benefits. When cooked, a vegetable loses a lot of vitamin C, but vitamins A and E are well preserved in it. Also, high temperatures destroy cell walls, allowing various nutrients to be released and better absorbed in the body. In addition, scientists claim that heat treatment of carrots leads to a 35% increase in the level of antioxidants in it. By the way, anthocyanin-rich purple carrot has the highest antioxidant capacity among all types of this vegetable.

Medicinal properties

Orange carrots are a real storehouse of beta-carotene (provitamin A) and one of the main natural sources of its production for the body. Under the influence of liver enzymes, it turns into vitamin A (retinol), which supports the work of many internal organs and systems. First, vitamin A is the foundation of overall eye health. With a lack of this vitamin, a person may experience a disorder of twilight vision, that is, he may lose the ability to see in dim light (popularly this disorder is called "night blindness").

Secondly, vitamin A is important for the normal functioning of the retina and prevents age-related degeneration of the inner lining of the eyeball. By the way, here it acts in combination with two other

carotenoids contained in carrots - zeaxanthin and lutein . However, carrots are not a panacea, so you should not expect that eating this vegetable can correct or prevent myopia and farsightedness.

In addition, retinol takes an active part in the regulation of protein synthesis, redox processes in the body, and also contributes to normal metabolism and the functioning of the immune system. This vitamin is very important in the formation of the skeleton, teeth and nails. It is effective for seborrhea and brittle hair, as it is involved in regulating the activity of the sebaceous glands.

Vitamin A brings invaluable benefits during pregnancy. It is important for the normal development of the embryo and reduces the risk of having a premature baby. Retinol is also needed by the body to maintain good skin condition, as it stimulates the synthesis of collagen protein, as well as speeds up wound healing and reduces the risk of infections. Moreover, it plays an important role in slowing down the aging process.

Finally, beta-carotene is considered an excellent antioxidant that suppresses free radicals that provoke various dangerous diseases. For example, it is believed that beta-carotene is a good preventive measure that prevents the recurrence of cancer ^[15] . In addition, this carotenoid helps to maintain and prolong the life of AIDS patients. It is also important in the prevention of diseases of the cardiovascular system.

It should be noted that vitamin A is a fat-soluble vitamin. In order for it to be absorbed by the body and bring benefits, it is necessary to use it along with fats. So, raw carrots are recommended to be eaten with a small amount of vegetable oil or sour cream. It is also important to know that a large amount of beta-carotene in combination with alcohol puts too much stress on the liver.

In addition to beta-carotene, for which carrots are so valued, it also contains significant doses of vitamins B, C and E. The latter helps the absorption of retinol , and also has a beneficial effect on the skin, being responsible for the regeneration of its upper layers. Vitamin C, in turn, contributes to the thickening of the walls of blood vessels, and B vitamins are involved in fat metabolism and hematopoiesis.

Among other things, the root crop contains fiber, which contributes to the normalization of digestion. A large amount of potassium and magnesium is useful in diseases of the cardiovascular system (hypertension, atherosclerosis). Zinc, in turn, promotes the conversion of provitamin A into its active form.

In medicine

Carrots have long been considered a product with healing properties. For example, ancient Greek doctors recommended this vegetable to women as a contraceptive - to prevent pregnancy. By the way, modern scientists have confirmed that carrots contain enzymes that can block conception. However, their concentration is not enough to have a real effect. Since the 16th century, carrots have been used in Russia as a treatment for jaundice, cough, and hoarseness.

Modern research confirms the validity of the definition of carrots as a product of medicinal value. This vegetable is used as a raw material for the production of carotene. In addition, this multivitamin root crop is good both in the treatment of certain diseases and in dietary nutrition. Fiber, glucose, lecithin, as well as essential and fatty oils are also obtained from it.

Scientists do not ignore carrot seeds, from which they learned how to obtain an extract of daucarine - a complex of flavonoids (these plant pigments are involved in many processes in the body). In pharmaceuticals, it is presented in the form of tablets of 0.02 g and has an effect mainly on the

coronary vessels. It is important to note that the drug is aimed at attenuating angina attacks, but does not stop them.

Carrots were also appreciated in dentistry. According to many dentists, in our time, when a person consumes a lot of thermally processed soft foods, he makes an insufficient amount of chewing movements, as a result of which the load on the periodontium (the tissue surrounding the tooth) is reduced. Dentists recommend eating raw carrots as a gum trainer. In addition, carotene has a beneficial effect on the oral mucosa, and also strengthens tooth enamel.

In folk medicine

Undoubtedly, carrots have a large number of useful and medicinal properties, which made them a very popular product in folk medicine. However, it is worth paying attention to the fact that it is almost impossible to cure any disease with carrots alone. This vegetable takes an active part in the prevention of various ailments, but before using it in treatment, you should definitely consult a doctor, because in some cases, carrots not only will not help, but can also lead to complications of the disease.

Traditional healers believe that carrots, unlike many other vegetables, are suitable for consumption in an unpeeled form. It is recommended to wash the root crop well, but do not peel it from the top skin, since it contains coarse dietary fiber. They allow you to normalize the functioning of the intestines and improve peristalsis. In addition, according to Japanese and New Zealand scientists, fibers are able to neutralize food toxins and carcinogens.

It is also believed that, thanks to vitamin E, carrots can help improve the condition of the male body, participating in the process of restoring sexual function. According to folk recipes, men suffering from lack of erection should include carrots boiled in milk, as well as carrot juice mixed with honey, in their diet. Drug treatment can also be accompanied by the use of a mixture of 1-2 apples, 1 carrot root and 1 teaspoon of honey.

- Infusions and powder

Medicinal infusions and decoctions are usually prepared on the basis of carrot seeds and have a positive effect on the state of the body with biliary dyskinesia, cholelithiasis, digestive and kidney diseases, as well as constipation and hemorrhoids. Along with carrot juice, an infusion of the seeds is also recommended as an anthelmintic.

The influence of medicinal drinks is due to the fact that they, firstly, activate the formation and secretion of bile. Secondly, they have a diuretic effect, which helps to remove sand and small stones from the kidneys. Thirdly, infusions stop attacks of pain in renal colic. By the way, the elements contained in carrots are involved in the regenerative processes of renal epithelial cells, which are destroyed by the use of spicy foods and alcohol, therefore, not only the seeds, but also the root crop is useful in the treatment of kidney diseases.

Irregular eating and a sedentary lifestyle of a modern person often lead to constipation. Those, in turn, provoke stagnation of blood in the rectum and, as a result, hemorrhoids. Given that carrots have a mild laxative effect, they do not irritate the intestinal walls, but at the same time effectively solve the problem of constipation. To get rid of problems and normalize digestion, traditional healers recommend using either carrot seed powder or infusions. But tea from carrot tops helps to resist hemorrhoids.

To prepare the infusion, it is necessary to collect seeds in September (along with umbrellas). Then they need to be dried and stored in places with low humidity. Further, from the seeds, previously threshed

(without umbrellas), you can make infusions or crush them into powder. To prepare a medicinal drink, pour 1 tablespoon of seeds with boiling water and leave to infuse in a thermos all night. After this, the infusion should be filtered and drunk warmed 3 times a day. The powder should also be taken three times a day, 1 gram.

As for the tops for brewing tea, they are harvested in the summer (June-July), dried and stored in dry boxes. To brew one cup of tea, 1 teaspoon of dry carrot leaves is enough. You can also add other herbs or dried berries to them. However, it should be borne in mind that for all its usefulness, the tops draw a large amount of nitrates from the ground, so pregnant and lactating women should be wary of such teas.

- Compresses

The use of carrots in folk medicine is not limited to internal use, but also involves external influences. So, this vegetable has a beneficial effect on various skin lesions, reducing pain and providing wound healing and anti-inflammatory effects.

Traditional healers claim that carrots promote the healing of not only superficial wounds, but also cope with more complex cases, pulling out pus from an infected focus. To do this, apply fresh carrots chopped to a mushy state to the damaged area, cover it with thick paper (it is important not to replace the paper with cotton wool and gauze, which will quickly absorb the juice) and bandage it.

Sliced raw carrots, fixed on the body with bandages, are suitable for relieving skin inflammation as a result of minor sunburn.

- Juice

Carrot juice in its pure form or with the addition of various ingredients is used for various pathologies and as a prophylactic. It is usually prepared with a juicer, but if you do not have one, you can try to do it manually. To do this, grate the carrots on a fine grater, and then squeeze the juice with your hands, wrapping the chopped vegetable in gauze.

Carrot juice is useful for hyperacidity, as well as for anemia (anemia). In the latter case, it is recommended to drink not just carrot juice, but a mixture of carrot, beet and radish juices. This addition to drug treatment usually lasts 2-3 months. The drink is taken 1-2 tablespoons per day. Carrot juice in combination with celery juice is necessary for the body in case of frequent stress and nervous disorders.

Orange root juice is also effective in fighting infections that affect the respiratory organs. For example, with laryngitis, folk healers advise drinking carrot juice with honey (1 tablespoon of honey per glass of fresh juice), 2 tablespoons 4-5 times a day. With angina, a similar mixture (1 tablespoon of honey per 100 g of juice and 100 g of water) is recommended to gargle.

Carrot juice is effective in treating the common cold. To prepare drops, you need to take half a glass of fresh juice, half a glass of vegetable oil and add 3-4 drops of garlic juice to this mixture. This medicine is instilled 3 drops into each nasal passage 3-4 times a day.

in oriental medicine

In oriental medicine, carrots are classified as neutral products that do not have a pronounced cooling or warming effect on the body. It is believed that the orange root vegetable has a beneficial effect on the work of the heart, and also strengthens the nervous system and relieves fatigue.

The use of carrots in traditional oriental medicine is not too different from domestic habits. For example, there, just like in our country, they practice making an infusion from carrot seeds. They are poured with boiling water, let it brew and then take 1 spoonful several times a day. It is believed that this drink warms the kidneys. Also, carrots have long been considered a good helper for poisoning and inflammation of the gallbladder and bladder. In addition, carrots are used to remove intestinal parasites.

In scientific research

Being one of the main sources of beta-carotene, supplying a large amount of vitamins and minerals to the human body, carrots were doomed to become the object of scientific research. It should be noted that this vegetable is of interest not only to medical scientists, but also to representatives of other fields of science.

However, studies and experiments related to the effect of carrots on human health are still of paramount importance. So, Dr. Kirsten Brandt from the University of Newcastle, during experiments on rats, found that eating carrots reduces the risk of developing cancer. She also found that the component responsible for this effect is the natural pesticide falcarinol, which protects carrots from fungi^[8].

Despite the fact that scientists have not figured out what the mechanism of action of falcarinol is and what doses are needed for successful treatment, a desperate American Anne Cameron, who suffered from colon cancer with lung metastases, decided to test this method of treatment on herself. After reading on the Internet about the anti-cancer effect of carrots, she organized therapy for herself - every day to drink about five glasses (about 2 kg of root vegetables) of fresh carrot juice. After 8 months, her stage 4 cancer was cured.

However, doctors still argue that the treatment of cancer with carrots alone is simply impossible. They explain that, firstly, the tumor of this woman was operated on before she started drinking carrot juice, and, secondly, obscurations in the lungs were not biopsied, so it is no longer possible to say for sure that these were metastases now^[14]. Nevertheless, doctors do not deny the beneficial effect of carrot juice on the patient's body, since she refused postoperative chemotherapy, replacing it with a "carrot" diet and still managed to completely defeat the disease.

Thus, the treatment of cancer must be approached with great seriousness and not rely solely on the miraculous properties of certain foods and herbs. Dr. Brandt in his study says that carrots show a much better effect in the fight against cancer compared to other foods. The important thing here is that she compares the effects of carrots to those of other foods, not to drug effects.

A vivid and at the same time sad example of refusing treatment and timely surgery in favor of spiritual practices and a raw food diet (carrots were his favorite vegetable) was the famous head of Apple, Steve Jobs, who died of pancreatic cancer.

Scientists who studied the effects of beta-carotene on the development of lung cancer came to interesting conclusions. A large-scale study showed that beta-carotene, which enters the human body mainly from carrots, helps prevent cancer of the respiratory system. However, smokers and workers in asbestos factories, on the contrary, should be careful with large doses of beta-carotene, since under such conditions it may not prevent, but, on the contrary, provoke the development of the disease^[9]. The reasons for the reverse action are not yet fully understood, but doctors are working on solving this puzzle.

As noted above, carrots are of interest not only to representatives of the medical field. For example, Scottish scientists have invented a way to turn carrot waste after juicing into nanofibers. This environmentally friendly and biodegradable material could in the future replace carbon nanofibers, widely used in the manufacture of motorcycle helmets, snowboards and automotive components. In this way, scientists hope to reduce the consumption of oil needed to produce carbon fiber ^[10].

Weight regulation

As a low-calorie, vitamin- and mineral-rich food, carrots are often used as a dietary staple ^[11]. However, people with diseases of the liver and organs of the digestive system, it is contraindicated. At the very least, before you “sit down” on it, you need to consult a doctor. You should also be prepared for the fact that consuming a large amount of this orange vegetable can lead to yellowing of the skin.

A diet from one product, even if it is a multivitamin carrot, cannot be called balanced in any way, so experts generally do not advise resorting to such measures for weight loss. It is better to replace carrots with fast food or eat one root vegetable shortly before a meal, in order to then eat a smaller portion and feel full faster ^[11]. But if you still decide to make yourself a mono -diet, you should not continue it for more than three days.

During this period, it is recommended to use both raw vegetables and boiled. By the way, a little fat must be added to raw carrots, but if the diet is aimed at weight loss, then you need to follow the proportions: 1 tablespoon of vegetable oil or 2 tablespoons of low-fat sour cream per 1 kg of root.

If we talk about therapeutic dietary nutrition, then carrots, as a rule, are always included in the diet. In addition, carrot purees and juices can be given to children as early as 6-7 months of age.

In cooking

Carrots are a familiar vegetable in almost all cuisines of the world. It is added to vegetable stews, salads, soups, all types of pilaf are cooked with it and used as a healthy snack. In many countries, an orange root vegetable is used in the preparation of various desserts: pies, puddings, tsimes (Jewish sweet vegetable stew), etc. And in Japan, you can buy carrot and orange flavored ice cream. One of the most popular vegetable juices is also made from carrots.

In the past few years, there has been an ecological trend in cooking, which means that now the maximum use of all parts of a vegetable or fruit is in fashion. So, cooks came up with the use of carrot tops - they add it to soups, sauces, salads and casseroles.

At first glance, cooking carrots looks like a simple task, but in fact, the vegetable often turns out to be either undercooked or overcooked, so it's worth remembering that carrots cut into slices or cubes will cook in 8-10 minutes, and a whole root crop in 20-30. Carrots are baked at a temperature of 180 ° C for 40-45 minutes. As for frying, small circles or straws will be ready in 4-6 minutes.

Carrots go well with almost all foods, and are especially well absorbed with proteins and fats. It is also useful to eat carrots with foods rich in iron, as the root vegetable contributes to its maximum absorption.

Beverages

A lot has already been said about the beneficial properties of freshly squeezed carrot juice, so it's worth adding that you don't need to hope for a similar effect from juices from packs. Studies have shown that a fresh drink has 4 times more carotenoids, and the content of beta-carotene is 6 times

higher than that of nectars. True, you should drink fresh juice immediately after preparation, because carotenoids are destroyed when exposed to sunlight.

In order to somehow diversify carrot juice, you can prepare a real vitamin cocktail. This will require a quarter of a medium beet, 1 orange, 2 medium carrots and a piece of ginger^[12]. First you need to squeeze the beetroot juice and let it stand in the refrigerator for a couple of hours, then chop and add all the other ingredients.

In cosmetology

In cosmetology, carrots are valued primarily due to the presence of beta-carotene in their composition, which is transformed into vitamin A in the body. It helps maintain the skin in good condition and promotes acne healing, therefore, its synthetic analogues of retinoids are often used in cosmetics.

Studies have shown that retinol increases collagen production and plays an active role in smoothing out wrinkles, which is why it can be found in stores in the form of a facial serum. If you want to get a more budget option or are afraid to apply any “chemistry” to your face, then you can try to prepare the product yourself using carrots.

The mask for oily skin consists of chopped carrots and a small amount of water (the mixture should be brought to a slurry). A remedy suitable for dry skin is a mask for restoring water balance. To prepare it, you need to mix 1 tablespoon of grated carrots, egg yolk and 2 tablespoons of sour cream. For normal skin, a remedy of 1/4 cup of kefir, 1/4 cup of carrot juice and 1 tablespoon of honey is suitable. Keep the mask on your face for about 15 minutes, then rinse with warm water.

Dangerous properties of carrots and contraindications

Carrots are a healthy low-calorie dietary product that, when consumed in moderation, has a predominantly beneficial effect on human health. However, as with any other product, there are cases in which the consumption of carrots should be limited.

First, you should not lean too much on fresh carrot juice, because it puts a serious strain on the pancreas.

Secondly, with exacerbations of diseases of the gastrointestinal tract, it is generally better to avoid carrots, since it contains a large amount of insoluble fibers that are difficult for a diseased intestine.

Thirdly, carrots are not recommended for use in liver diseases. It is important to note that this vegetable is useful as a prevention of gastrointestinal and liver diseases, but is contraindicated during exacerbations.

Finally, with the daily consumption of a large amount of carrots (more than two pieces), carotenemia can occur. In such a situation, the skin (on the palms and feet) and the whites of the eyes acquire a yellowish-orange color^[13]. It does not cause much harm to the body, but it makes it clear that the consumption of carrots should be reduced. Also, do not forget that carrots easily absorb nitrates, which manufacturers add to the soil to accelerate growth.

Botanical description

From a botanical point of view, carrots are a biennial herbaceous plant, although in everyday life this is usually called its root crop used in cooking. Most scientists are of the opinion that cultivated carrots (Latin *daucus carota subsp. sativus*) belongs to the genus of wild carrots, family Umbelliferae.

However, some botanists do not agree with this, considering the sowing and wild carrots to be different species ^[1]. At the same time, the homeland of the domestic species has not yet been found. True, scientists have not yet been able to cultivate and bring an edible vegetable out of the wild, so discussions continue.

origin of name

The word "carrot" comes from the Old Slavonic " *marky* ", and the English " *carrot* ", first found in written sources in 1530, was most likely borrowed from the French language, in which carrots are still called " *carotte* ". The French name comes from the Latin " *carōta* ", and that, in turn, from the Greek " *καρωτόν* " (*karōton*). It is believed that the Greek word has an Indo-European root *ker* - (horn), due to the similarity of the shape of the root crop with a horn ^[4].

Cultivation history

Carrots are one of the oldest cultivated vegetable crops. Based on archaeological excavations, rock paintings and written evidence, it can be argued that it is already about 4 thousand years old. ^[2]. Researchers believe that the countries of Western Asia - Afghanistan and Iran - were the place where this vegetable appeared. The seeds of this vegetable have also been discovered in Switzerland during excavations of Bronze Age pile structures. There is evidence that the carrot was known to the ancient Romans and Greeks. Judging by written evidence, in those days people considered it a real delicacy and served it at the table during big festivities ^[3].

Interestingly, in contrast to modern use, in ancient times, carrots were grown primarily for their seeds and fragrant tops. The earliest references to the use of the root crop were found in ancient sources and date back to the 1st century AD. Carrots were known not only as a food product, but also as a medicine. Many medical works of antiquity describe the healing properties of this plant. Moreover, the Hellenes called it " *philtron* " - the magic of love and believed that eating carrots would help a person find his love faster.

It is believed that carrots were brought to Europe around the 9th-13th centuries. The first to adopt it in their diet were the Spaniards and the French. This vegetable was especially popular at the court of Charlemagne. Starting from the thirteenth century Carrot cultivation began in China, Japan and India. But the Americans at first did not appreciate the taste and healing qualities of carrots at all, letting the crops feed to pigs. The first written mention of carrots in Russia is an entry in the "Domostroy" of the 16th century, although it is believed that it was known here much earlier.

However, it is worth noting that until the seventeenth century. carrots were not at all the same as we are used to seeing them today, as you can see by looking at the canvases of the masters of European painting of those times. The main difference is the color of the root crop. Scientists believe that white and purple carrots were the most widely distributed, but varieties of red and yellow flowers were also known. According to Academician N. Vavilov, the birthplace of white and purple carrots was Afghanistan, yellow - China, and red - the Mediterranean ^[1].

The bright orange carrots familiar to us were bred by Dutch gardeners only in the 17th century. The reason why the vegetable received this particular color is not known for certain. Perhaps this option took root and was appreciated due to its taste characteristics. But according to legend, the color of carrots is associated with the Dutch royal dynasty of Orange, whose official color has long been orange. In gratitude to William of Orange, under which Holland gained independence, or simply to please the "orange prince", gardeners brought out a vegetable of just that color.

Selection and storage

First of all, it is recommended to choose medium-sized carrots that are not too large. Naturally, there should be no visible damage, spots or growths on the root crop, it must be solid. A greenish color at the base of a carrot means it will taste bitter. If you buy carrots with tops, then the leaves should in no case be withered, but on the contrary, fresh and bright green.

As for storage, this vegetable is not too whimsical and is quite capable of lying in a plastic bag in the refrigerator for up to 1 month. True, it is important to immediately cut off the tops from the root crop, since it draws all the freshness and moisture out of it. Also, carrots should not be stored next to apples, which emit ethylene gas, which contributes to its rapid overripeness and decay. If we are talking about storing large quantities of carrots, then usually gardeners lower it into the cellar. Some summer residents recommend storing the vegetable in boxes with a mixture of sand and wood shavings, which should prevent moisture from evaporating and slow down the rotting process.

Carrots can also be cut or grated and frozen - in this form they can be stored for a whole year. Although given that this vegetable is quite available in the markets and in supermarkets at any time of the year, people usually do not make large stocks. For the same reason, it doesn't make much sense to follow a lot of advice from the Internet and wrap carrots in wet towels or store them in jars of water in order to extend their lifespan.

If your carrots still have a slight mold, then do not rush to throw it away. Unlike soft foods, in which the fungus spreads extremely quickly, it is more difficult for it to cope with hard carrots. Thus, cutting off the affected part and another small piece, the vegetable can be used.

Varieties

Cultivated carrots are usually divided into table (for human consumption) and fodder (for pet food). Thanks to the work of breeders, the table variety of cultivated carrots has a large number of different varieties intended for various purposes. For example, some of them (Bolero F1, Maestro F1) are perfect for making fresh juice. And the Kazan F1 variety was bred specifically for cooking pilaf.

In addition, yellow, purple and red carrots did not remain in the Middle Ages at all, they are still grown and successfully used in many countries of the world. The color of a vegetable depends on the content of one or another pigment in it. So, the yellow color of the carrot gives lutein , red - lycopene , purple - anthocyanin, orange - beta-carotene. All these substances are useful in their own way and have a predominantly positive effect on the body.

Among the unusual varieties that attract attention with their appearance, one can single out Dragon , whose long fruits (up to 25 cm) have a bright purple color and spicy taste, Lunar White " - with white fruits and " Yellowstone " - with canary-yellow fruits. One cannot ignore the Parisian Carrot variety, the fruits of which, although traditionally orange in color, have a rounded shape (3 to 6 cm in diameter) and resemble radishes. But carrot varieties " Cosmic purple " hides bright orange flesh behind a purple skin.

By the way, the baby carrot that has recently gained popularity did not actually appear as a result of breeding a new variety, but only because California farmer Mike Yuroshek was tired of throwing away part of the crop due to curvature or other minor "mutilations" of root crops. Then he threw illiquid carrots into a potato peeler and at the exit received small peeled fruits, which supermarkets began to buy from him at a price much higher than the price of ordinary carrots. True, over time, breeders brought out a real baby carrot with very small and sweet fruits.

Description and features of growing carrots

Depending on the variety, the carrot root can reach a weight of 200 g and a length of 30 cm with a diameter of 2.5 to 6 cm. It can also take on a different shape: conical, cylindrical or round. Usually the root crop is in the soil at a depth of about 60 cm, and the roots of the plant go even deeper into the ground - about 1.5-2 m. In the ground part, carrots have stems covered with hard hairs and three-pinnate leaves on long petioles. During flowering, the plant produces white umbrella-shaped inflorescences. Pollination occurs due to various insects.

Best of all, this vegetable grows on loose soil cleared of weeds. Carrots are very fond of sunlight, so it is preferable to choose unshaded places for planting. At the same time, the vegetable is very moisture-loving and does not tolerate drought well, starting to fade quickly.

They begin to plant carrots mainly in April, but in order to obtain the earliest possible harvest, they practice sowing before winter - with the first frosts. Harvesting takes place depending on the variety. In early ripening carrots, the growing season is 80-100 days, and in late-ripening - 120-150.

Diseases and pests

Of all diseases, carrots are the most susceptible to attack by various rots. The most common is white rot, which affects root crops, both during growth and during storage. This disease manifests itself in the form of a white "fluffy" plaque, which thickens over time, forming black sclerotia. To prevent the appearance of white rot during the growth period of carrots, it is necessary to carefully cultivate the land by deep plowing. It is required to store root crops at a temperature of 4-5 degrees.

Black and gray rot, in turn, hit the leaves of the plant. The first covers them with brown spots, and the second affects the veins and petioles of the leaves with gray-brown spots, which eventually pass to the fruits. The cause of these diseases is infected seeds, root crops and plants left in the soil. Therefore, it is important to carry out the correct crop rotation, thin out and weed carrots in time and feed them with potash fertilizers. In addition, you should carefully harvest, protecting carrots from injury.

Among pests, the so-called carrot fly causes the greatest harm to carrots - a black shiny insect with a greenish tint, reaching 5 mm in length. These flies are especially dangerous during heavy rainfall. The insect lays eggs, and the developed larvae penetrate the root crop and pierce it with dark holes. Such fruits begin to gradually lag behind in growth, and the leaves of the plant change color to purple, wither and die. Experts say that damage can be avoided by choosing light soil for sowing and deep plowing of the soil in the fall. Weeding and thinning carrots is also required.

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Carrot - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of carrots 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 vegetable is indicated, the use of carrots is considered in various types of medicine and the effectiveness of its use in various diseases. Potentially adverse effects of carrots analyzed separately on the human body under certain medical conditions and diseases. Considered scientific basics diets With her application.



Pineapple (lat. Ananas comosus)

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

Keywords: pineapple, beneficial properties, potentially dangerous effects, side effects, contraindications, diets

Beneficial features

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

100 g of fresh pineapple contains [5]:					
Main substances:	G	Minerals:	mg	Vitamins:	mg
Water	86	Potassium	109	Vitamin C	47.8
Carbohydrates	13.12	Calcium	13	Vitamin PP	0.5
Sugar	9.85	Magnesium	12	Vitamin B6	0.112
Alimentary fiber	1.4	Phosphorus	eight	Vitamin B1	0.079
Squirrels	0.54	Sodium	one	Vitamin B2	0.032
Fats	0.12	Iron	0.29	Vitamin A	0.03
calories	50kcal	Zinc	0.12	Vitamin E	0.02

When preserved, pineapples lose a significant amount of vitamins and fiber. At the same time, they become more high-calorie and contain much more sugar. Especially in this regard, fruits canned in thick syrup stand out.

Medicinal properties

Pineapple is rich in various vitamins and minerals and mainly has a positive effect on the body. However, it is often valued not for the standard set of nutrients that can be found in any other fruit, but for a certain enzyme bromelain concentrated mainly in the core of the fruit. There are even legends that this enzyme breaks down fats, which is why pineapple is often called the #1 fruit for weight loss.

However, eating a late, heavy dinner with a few slices of pineapple will absolutely not help you burn extra calories. To date, science knows that the proteolytic enzyme bromelain promotes the breakdown of proteins, but there is no evidence of its involvement in the process of fat breakdown. Thus, pineapple, and in particular the enzyme contained in it, can help to better digest protein foods (meat, fish, dairy products), but will not get rid of excess weight.

In addition to participating in the process of protein breakdown, bromelain also has an anti-inflammatory effect and fights swelling. Together with the fiber contained in pineapple, this enzyme helps to normalize intestinal motility, has a beneficial effect on digestion and helps get rid of constipation. Scientists claim that bromelain prevents the formation of blood clots, as it exhibits anticoagulant activity.

As for the vitamin cocktail found in pineapple, vitamin C is the highest concentration. Being a strong antioxidant, it helps protect healthy cells under attack by free radicals, contributes to the body's defense against bacterial and viral infections, and also helps to absorb iron.

There are also B vitamins in the composition of pineapple. For example, vitamin B1 promotes the absorption of fats and carbohydrates. In addition, it has a beneficial effect on the body with overwork and nervous exhaustion. Vitamin B2 regulates the metabolism in the body, supports the work of the visual organs.

Nicotinic acid (vitamin PP), which is present in pineapple in a significant amount, takes part in carbohydrate and protein metabolism, stimulates the pancreas and regulates the secretion of its juice. In addition, it has a dilating effect on blood vessels.

Although not in too large doses, pineapple also contains vitamin E and beta-carotene, which in the human body takes the form of vitamin A. The first is necessary for the normal functioning of the reproductive system. In addition, it provides strengthening of the heart and eye muscles, thus supporting the work of the cardiovascular and visual systems. Vitamin A also has a positive effect on eye health. In addition, it contributes to the normal development of a growing organism and is responsible for the condition of the skin and mucous membranes.

In addition to vitamins, pineapple contains many useful minerals. For example, this exotic fruit is a rich source of potassium, calcium, magnesium and phosphorus. Potassium is actively involved in the process of water-salt metabolism. Calcium plays an important role in bone renewal. The level of phosphorus compounds in the body affects the mental and physical activity of a person. And magnesium regulates the heart rate and takes part in a large number of enzymatic reactions.

Trace elements such as manganese and copper contained in pineapple are also of great importance for the body. Thus, manganese is necessary for the formation of bone and connective tissues, the activation of certain digestive enzymes, and the improvement of the quality of sperm in men ^[12]. And copper favors the absorption of iron, regulates blood pressure and heart rate ^[10].

In medicine

Since the 60s. scientists have been actively studying the characteristics and possibilities of application in various fields, including medicine, of the bromelain substance contained in pineapple. During research and experiments, it was revealed that this enzyme has a mass of multidirectional beneficial properties. In particular, it is able to destroy blood clots, normalize blood pressure, regulate metabolism, fight urinary tract infections, have an anti-inflammatory effect and restore connective tissues.

Nowadays, bromelain can be obtained not only from fresh overseas fruit, but also with the intake of a dietary supplement of the same name. As a rule, the enzyme is obtained not from the pulp of pineapple, but from the leaves and stem of the plant, which contains many times more of it. Usually the drug is produced in the form of tablets or capsules of 500 mg. Before using it, you should definitely consult a doctor.

Bromelain is recommended to be taken both as a preventive measure for various diseases, and for problems that have already arisen. For example, with digestive disorders, exocrine pancreatic insufficiency, malfunctions of the cardiovascular system, inflammatory processes of any nature. By the way, this drug is especially popular among athletes, as it helps to recover faster after various injuries and injuries ^[11]. In addition, it is often taken in the postoperative period.

Unfortunately, very often the sale of bromelain is accompanied by speculative advertising that promises to burn extra calories. In fact, the effect of the drug is not aimed at weight loss. Of course, it can indirectly contribute to the achievement of harmony by resolving problems in the digestive tract, but it does not affect other causes of weight gain in any way. Similarly, bromelain's often-touted anti-aging effect has not been scientifically proven.

In folk medicine

Treatment with folk methods usually involves the use of simple and easily accessible ingredients in recipes. In our latitudes, it is difficult to call pineapple affordable, therefore the range of its application is not too wide. But the indigenous people of South America have long used all parts of this fruit to treat various diseases. With the spread of pineapple plantations to other tropical countries, folk recipes began to appear there too.

So, for example, in Africa, the root of the plant, dried and ground into powder, is used to get rid of edema. The crushed peel is used in wound healing, and its decoction with the addition of rosemary is considered effective for hemorrhoids. The Indians in Panama drink the juice from the leaves of the plant as a laxative and anthelmintic ^[13]. In Bangladesh, pineapple juice is used to treat fever, and the juice from the leaves of the plant is used to treat jaundice ^[14].

In addition, pineapple leaf juice is believed to lower blood sugar levels, so in countries with low living standards and lack of access to medicines, it is advised as an alternative to drugs for diabetics ^[15]. In some places, it is believed that the pulp of an unripe fruit with honey, taken three days in a row on an empty stomach, can provoke a miscarriage and get rid of an unwanted pregnancy.

Given that we do not grow pineapples, there is simply nowhere to get the roots and leaves of the plant, so traditional healers usually suggest using only the pulp of the fruit. Crumpled into gruel, it is recommended to add it to various vitamin mixtures based on berries, lemon, ginger, etc. to activate the protective functions of the body and in the fight against colds. For the same purpose, finely chopped fruit pulp is poured into 2 liters of vodka, a little lemon juice is added and kept in the refrigerator for 3 weeks, and then taken 50 mg per day.

Alcohol tincture is also used for blockage of blood vessels. To prepare the medicine, it is necessary to grind the pulp of pineapple, pour 1 liter of vodka into it, close it tightly and leave it in a dark, cool place for 2 weeks. You need to take this drug 1 tablespoon 15 minutes before eating. Naturally, one cannot fight vascular obstruction with pineapple tincture alone. With the approval of a doctor, it can be used as an additional remedy.

in oriental medicine

In Chinese medical treatises, foods were usually classified according to their levels of Yin and Yang. And the human diet had to be composed in such a way that the balance of the two energies was maintained in the body. Moreover, food must be chosen according to the season, as this helps to stay in harmony with nature. ^[16]. It is believed that pineapple has a female Yin energy and has a cooling effect on the body, so it is recommended to use it in the hot summer.

Pineapple juice is considered an effective protector against heat stroke, and the pulp of the fruit is used to eliminate digestive problems. By the way, in Asia there is a tradition to finish the meal with papaya or pineapple with salt and pepper. Due to their enzyme systems, these fruits help food to be digested and absorbed faster.

In scientific research

Recently, pineapple is increasingly becoming the object of scientific research. Scientists are closely studying the properties of the enzyme bromelain, which shows great promise in the field of medicine. Its anti-thrombotic, anti-inflammatory and even anti-carcinogenic effects have already been identified. Do not fall out of the field of view of researchers and other parts of the plant that can be useful, both in medicine and in other areas.

If we talk about bromelain, it should be noted that its mechanism of action is not yet fully understood, but it is known for sure that this enzyme and the dietary supplement that is made from it are well tolerated by the body and do not have any side effects even with prolonged use.

One of the most important properties of bromelain is the relief of symptoms of angina pectoris and transient ischemic attack. Experiments on rats demonstrated the ability of the enzyme to have a

protective effect on the myocardium ^[18]. In addition, scientists have proven its effectiveness in the prevention and treatment of thrombophlebitis ^[19].

Researchers believe that bromelain has good potential to fight cancer cells. Experiments conducted on mouse and human cells have shown that this enzyme is capable of destroying protein and thereby depriving the tumor of building material ^[21].

Not so long ago, the possibility of treating allergic respiratory diseases (for example, asthma) with bromelain was considered. There was also a study that tested the effectiveness of this enzyme in the fight against cough in tuberculosis. Scientists have concluded that a mixture of pineapple juice, salt, pepper and honey can help dissolve mucus in the lungs ^[17].

In combination with trypsin and rutin, bromelain has an anti-inflammatory effect on par with the well-known non-steroidal drug *diclofenac*. This is evidenced by the observation of the treatment of 103 patients with osteoarthritis of the knee ^[20]. In addition, taking this enzyme prior to any surgical procedure may reduce the time it takes for post-operative pain to disappear.

Weight regulation

As has been repeatedly noted above, pineapple is often associated with a product that provides quick and painless weight loss. However, this is not entirely true, since this fruit can only help improve digestion, but is not directly related to direct weight loss. In addition, nutritionists insist that there are no products, the use of which in itself would lead to weight loss.

However, pineapple should not be discounted when forming your diet, because it is low in calories, rich in vitamins and has a balanced set of minerals ^[11]. This fruit at least does not add extra calories and at the same time supplies the body with a lot of useful substances.

The famous actress Sophia Loren once admitted that she is helped to keep herself in shape by pineapple fasting days, which she arranges 3-4 times a week. On one such day, the actress eats one fresh pineapple and does not limit herself in drinking water. However, nutritionists agree that the benefits of such a diet are extremely doubtful. In their opinion, the energy value of such a monotonous diet is too low, and such unloadings are carried out too often. All this can, as a result, provoke a pathological feeling of hunger.

In order to minimize the harm caused by the diet to the body, you should take at least 2 kg of fresh pineapple, 1 liter of pineapple juice, 100 g of boiled chicken breast, 100 g of low-fat cottage cheese and 30 g of rye flour bread. All these products are divided into 4 meals during one day. Juice is usually drunk no earlier than an hour after a meal.

In cooking

Pineapple is an ingredient used in almost every cuisine in the world. It is consumed fresh and canned, juice, jam and candies are made from it. Also, this fruit is added to salads, yogurts, ice cream, and pies. Moreover, pineapple is often cooked with meat, and in Malaysia it is customary to put it in curry sauce. A lot of discussions and jokes are caused by cooking pizza with pineapples. Not so long ago, at a meeting with schoolchildren, the President of Iceland even said that, if it were in his power, he would forever ban the preparation of "Hawaiian" pizza.

By the way, one of the most amazing ways of cooking pineapples was popular in the 19th century in the Moscow region. In the Muranovo estate, owned by the family of the famous poet Fyodor Tyutchev, greenhouses were equipped and mushrooms, peaches and pineapples were grown in them.

In those days, the latter were treated like overseas cabbage, which is why they prepared it accordingly - they fermented it. And after that, cabbage soup was cooked from pickled fruits.

As for the compatibility of pineapples with other foods, they do not like to coexist with dairy products. In addition, like all acidic fruits, they slow down the digestion process and are not recommended for breakfast.

Beverages

Smoothies and various cocktails are prepared from pineapple, but the simplest and most healthy drink is freshly squeezed juice, which fills the body with vitamins and minerals. It is sometimes mixed with other fruits and vegetables. One of these diet drinks can be prepared by taking 1 stalk of celery, 1 cucumber, a bunch of parsley and 3 slices of fresh pineapple. All ingredients must be ground in a blender without adding sugar and salt. You need to drink the juice within 15 minutes after preparation so that the pineapple-vegetable mixture does not lose its beneficial properties.

In tropical countries, pineapples are used to make alcoholic drinks. For example, pineapple wine is popular in Costa Rica. The Caribbean Piña is world-famous. Colada, in which, in addition to pineapple juice, light rum and coconut milk are added. But in Cuba and in some countries of South America they love cooling mate with pineapples soaked in rum.

In cosmetology

The myth that pineapple burns calories and fights cellulite is so firmly rooted in the public mind that girls in Latin American countries still believe in the magical power of this fruit. They use the skins of a fresh fruit, applying their pulp to the legs in the thigh area and wrapping them with cling film. Girls believe that during such a 30-minute procedure, the acid contained in pineapples destroys subcutaneous fat deposits.

Cosmetologists confirm that pineapple extract is a frequently used ingredient in cosmetology. It is added to various creams and lotions. However, it provides antibacterial, regenerating and illuminating, but not fat burning, effect. Moreover, experts warn against using fresh fruit by itself. It is best to use it in combination with other components.

For example, you can make a cleansing face mask by mixing 1 tablespoon pineapple puree, 1 tablespoon cornmeal, and 1 egg white. This mask should be applied in a thin layer on the skin of the face and left for 20 minutes, then rinse with warm water. Given that pineapple is an allergenic product, before applying the mixture to the face, you should first make a test on the wrist.

Unconventional use

Scientists are looking for a use for the biomass that remains after growing pineapples, since the fibers of the stems and leaves of the plant are very strong. So, one Spanish researcher developed a method for producing leather from pineapple leaves. It turned out a very high-quality material from which you can sew bags, shoes and use it in the furniture industry. Such leather is lighter and 30% cheaper than genuine leather.

Hollywood designer Oliver Tolentino sews clothes from "pineapple" fabric. For the manufacture of the material, fibers are taken from the leaves of the plant. They are processed and divided into threads, from which an ivory-colored fabric is woven, which is then easily dyed.

But American scientists have invented an environmentally friendly alternative to plastic from pineapple leaves and stems - a strong and lightweight nanofiber that can be used in auto construction [22].

Dangerous properties of pineapple and contraindications

bromelain contained in it has the potential to treat many serious diseases. However, you should not get carried away with the use of this fruit, because its consumption in large quantities is accompanied by the ingestion of acid into the body and is fraught with irritation of the mucous membranes of the stomach and oral cavity. For this reason, fresh pineapple should not be eaten with peptic ulcer and gastritis.

Dentists do not recommend abusing this fruit, as its juice acts destructively on tooth enamel. True, in this case, you can solve the problem with the help of an ordinary straw. People suffering from excess weight should not lean on dried pineapples, because they are almost 7 times more nutritious than fresh ones.

Pregnant women should also be careful with pineapple. You can eat this fruit, but in small quantities, because it helps to reduce and maintain the tone of muscle tissue. In addition, given that pineapple is considered a strong allergen, it is better to limit its use during lactation. Fruit is not advised to introduce into the diet of children under two years of age.

Botanical description

It is a tropical plant belonging to the *Bromeliad family* and is a perennial evergreen herb. Pineapple is also called the fruit of this plant, which received the scientific name "*crested pineapple*" (Latin *ananas comosus*) because of its lush top.

origin of name

The word pineapple, used in many languages of the world to refer to this exotic fruit, comes from the Tupi language, where it meant "*wonderful smell*" [1]. Interestingly, in English, the overseas fruit "pineapple" has never been. As soon as they got to know him, the British called him **pineapple** - the word then used to designate a cone (probably because of the external resemblance). Then the cones began to be called the word pinecone, and pineapple stuck to the pineapple. By analogy, in Spanish, pineapple is called the word **piña**.

Cultivation history

The homeland of the heat-loving pineapple is the territory of Paraguay and southern Brazil, where this fruit grew wild. The place where the pineapple was first cultivated by scientists is still unknown, but it was the Indians who spread it across South and Central America, Mexico, and also brought it to the islands of the Caribbean [2]. Pineapple, like many other exotic fruits and vegetables, came to Europe thanks to Christopher Columbus, who first saw it on the island of Guadeloupe at the end of the 15th century and called it **piña de Indes** (Spanish for *Indian bump*).

From Spain and Portugal, the pineapple began its journey to other tropical countries. The Spaniards brought it to the Philippines, Hawaii and Guam [3], and the Portuguese to India and the east coast of Africa. As for the Old World, here the exotic fruit fell in love, and they began to cultivate it in greenhouses and botanical gardens, which became fashionable in Europe at the end of the 18th century. The cultivation of overseas fruits was especially popular in rich British estates.

They also grew their pineapples at the court of Catherine the Great. Since the import of these fruits, as well as the cost of growing them in adverse conditions, was not cheap, the pineapple quickly became a symbol of wealth. By the way, in many aristocratic houses they resorted to tricks: pineapples were simply put on display during receptions and dinner parties, but they were never served at the table. Thus, expensive fruits could be used repeatedly until the fruits began to rot.

Varieties

In nature, there are many different varieties of pineapple, which are insignificant, but still differ from each other in the shape and size of the fruit, the physical properties of the pulp (crispy, soft, juicy, etc.), as well as flavors. In addition, breeders are tirelessly working on the development of new cultivars. Their research is aimed at making the fruit even more useful. Although it does not do without an economic component, because unusual varieties instantly attract buyers.

Not so long ago, after many years of experiments, scientists bred a pink pineapple, which has already gone on sale, having received the approval of the Sanitation Department. US Food Safety Authority. The secret of this fruit is that its composition is dominated by the carotenoid pigment lycopene, which determines the color of tomatoes and watermelons^[4]. The fruit differs only in the pink color of the pulp, from the outside it is absolutely unremarkable. Manufacturers of this variety also claim that their pineapple has a sweeter taste.

It is customary to consider sweeter and grown in many tropical countries, especially in Thailand, mini-pineapples, which weigh 200-500 grams and easily fit in the palm of your hand. And on the French island of Reunion, a special variety of pineapple called Victoria is cultivated. Its specificity lies in the fact that, unlike other fruits, it has a completely edible and very sweet core.

It is impossible to ignore two other interesting products, one way or another connected with pineapple. Firstly, we are talking about a hybrid of Chilean and Virginian strawberries, which was called *pineberry* (from English pineapple and strawberry). Visually, this fruit resembles a white strawberry with red seeds, but at the same time it has the taste and aroma of pineapple.

Secondly, we mean sea pineapples - a species of *ascidia* grown in aquaculture. They owe their name to the outward resemblance to an exotic fruit. They are eaten mainly in Asian countries. Sea pineapples have a very specific taste that is often described as rubber soaked in ammonia.

Growing features

Pineapple is a low plant (0.75-1.5 m) with a short strong stem and long pointed leaves, covered with thorns along the edges. Depending on the variety, the leaves can be either pure green or with red, yellow or light stripes. During flowering, the stem produces a peduncle with lilac or red inflorescences sitting in bracts^[2]. Gradually, they turn into large yellow-brown seedlings, similar to cones, since they consist of a large number of ovaries fused with bracts. Pineapple fruits do not have seeds.

Since it is a tropical plant, it is very thermophilic and feels comfortable at temperatures from 19 to 45°C. Colder conditions slow down the growth and ripening of fruits and make them more acidic. Pineapples tolerate the lack of moisture well, surviving due to thick, strong leaves that accumulate it for future use. Excess water can seriously damage the crop. As for the soil, it should rather be acidic, which is why pineapples take root so well on lands located near volcanoes (Costa Rica, Hawaii, Reunion, etc.) and flavored with their minerals.

When planting pineapples, the distance between the bushes must be at least 30 cm, otherwise the fruits will be too small. After about 7 months, the bushes begin to bloom, and then fruits form on them.

Harvesting can take place at different times depending on the goals pursued. So, not fully ripened fruits are harvested for export, ripe pineapples are suitable for domestic sales, and slightly overripe fruits are needed for canning. After harvesting, the bushes are divided into several parts and planted again.

growing at home

With the right approach to the process, even at home, it is quite possible to grow a pineapple, and with proper care, fruiting can also be achieved. To do this, cut off the top crest from a ripe fruit. Some gardeners leave a little pulp on the rosette, others cut it off at the very base.

If you chose the first option, then you should leave the top to dry in a dark place for a week, and then plant it in a pot, after dusting the cut with charcoal powder. In the second option, it is necessary to wash the tuft in a pink solution of potassium permanganate, sprinkle the base with wood ash and leave to dry for 5-6 hours. Then the stalk must be planted in the ground.

A pot for pineapple should be chosen low and wide (about 0.6 l in volume), since the root system of this plant is distributed mainly in breadth. Good drainage is also important for pineapple, so the bottom of the pot should be covered with charcoal. For a pineapple cutting, a mixture of leaf and sod land, birch sawdust, high-moor peat and coarse sand is well suited.

After planting, the pineapple is usually watered with a warm solution of potassium permanganate and placed in a well-lit place with a temperature regime of about 25 ° C. After 1-2 months, the cutting should take root and young leaves begin to appear on the plant. It is recommended to transplant it into a larger pot every year. Pineapple usually begins to bear fruit 3-4 years after planting.

Pests and diseases

Pineapple is subject to a large number of diseases and attacks by various pests. For example, roundworms, mealybugs, red mites, glitter beetles, and even crows can damage both the underground and aboveground parts of the plant. And some even pose a danger to the fetus. Also, various types of fungi can provoke rotting and wilting of the plant, so pineapple plantations can never do without fungicides and pesticides. At home, chemicals should be used only when necessary.

Selection and storage

The most delicious and ripe pineapples can only be found in their growing areas - in the tropics. Finding good quality fruits on the shelves of our stores is very difficult, since almost all pineapples come to us from distant South America on ships. Since ripe fruits do not tolerate long-term transportation, unripe pineapples are usually sent for export. Moreover, before shipping, they undergo mandatory processing: washing in chlorinated water, coating the crust with wax, and the tuft and bottom with safe fungicides.

Despite all these measures, pineapples reach us, losing a little the sweetness of taste, but retaining all the useful elements (the ripeness of the fruit when cut only affects the amount of sugar in it, but does not reduce its benefits). However, given that these tropical fruits are still not the most popular commodity in our country, after a long journey on ships, they can lie for quite a long time in warehouses or on the shelves of our supermarkets.

In order to find not stale, but relatively fresh fruit, you need to pay attention to the color of the peel - it should be uniformly yellow or green (green color does not indicate the unripeness of the fruit), without

brown spots that indicate impacts or damage from the inside. There should be no signs of mold or rot on the fruit. It should have a not very sharp sweet aroma.

A good pineapple has a solid and strong tuft with slightly wilted leaf tips, but it easily separates from the fruit. When tapped, the fruit makes a dull sound, and no dents remain on the peel. The size does not really matter, because it does not affect the quality of the fruit. But when buying, take into account the fact that the skin is quite thick and after cutting off the pulp, there is not much left ^[9].

As for storage, a whole unpeeled pineapple should be kept at room temperature. After peeling and cutting, the fruit can lie in the refrigerator for 1-2 days, but it is better to eat it right away. The fruit is not recommended to be frozen, because at sub-zero temperatures it loses a significant amount of its beneficial properties and loses its usual taste, becoming insipid.

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Pineapple - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of pineapple 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 fruit are indicated, the use of pineapple in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of pineapple on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With his application.



Vitamin E - description, benefits, effects on the body and the best sources

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Abstract. The article discusses the main properties of the vitamin E and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The best natural sources of vitamin E are indicated. The use of the vitamin in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of vitamin E on the human body under certain medical conditions and diseases are analyzed separately.

Keywords: vitamin E, vitamin E , benefits, harms, beneficial properties, contraindications, sources

Discovery history

Vitamin E was first discovered in 1922 by scientists Evans and Bishop as an unknown component in vegetable oils required for reproduction in female rats. This observation was immediately published, and initially the substance was called " *factor X* " and " *factor against infertility* ", and later Evans proposed to officially accept the letter E for it - following the recently discovered vitamin D.

The active vitamin E compound was isolated in 1936 from wheat germ oil. Because this substance allowed animals to have offspring, the research team decided to name it alpha-tocopherol, from the Greek " *tocos* " (meaning childbirth) and " *feroin* " (to raise). To indicate the presence of an OH group in the molecule, " ol " was added to the end . Its correct structure was given in 1938 and the substance was first synthesized by P. Carrer , also in 1938. In the 1940s, a team of Canadian doctors discovered that vitamin E could protect people from coronary heart disease. The demand for vitamin E has increased rapidly. Along with market demand, the number of product types available to the pharmaceutical, food, feed and cosmetics industries has increased. In 1968, the Nutrition and Nutrition Boards of the National Academy of Sciences officially recognized vitamin E as an essential nutrient ^[3]

Foods rich in vitamin E

The content of vitamin E in food ^[1,2,4] :

Wheat germ oil	149.4
Sunflower oil	41.08
Almond oil	39.2
Sunflower seeds	35.17
Almond	25.63
Hazelnut	15.03
Olive oil	14.35
pine nut	9.33
Peanuts (raw)	8.33
Brazilian nut	5.65
Dried apricots	4.33
Olives	3.81
Salmon	3.55
Pistachio (raw)	2.86
turnip tops	2.86
Crayfish	2.85
Trout	2.34
Butter	2.32
Pumpkin seeds (dried)	2.18
Avocado	2.07
Spinach	2.03
Chard	1.89
red bell pepper	1.58
curly cabbage	1.54
Kiwi	1.46
Octopus	1.2
Blackberry	1.17
Asparagus	1.13
Black currant	one

Mango	0.9
Apricot	0.89
Raspberry	0.87
Broccoli	0.78
Papaya	0.3
Sweet potato	0.26

See also [Top 100 Natural Sources of Vitamin E](#).

Daily requirement for vitamin E

As we can see, vegetable oils are the main sources of vitamin E. Also, a large amount of the vitamin can be obtained from nuts. Vitamin E is very important for our body, so it is necessary to ensure the supply of a sufficient amount of it with food. According to official data, the daily intake of vitamin E is:

Age	Men: mg/day (International Units/day)	Women: mg/day (International Units/day)
Infants 0-6 months	4 mg (6 IU)	4 mg (6 IU)
Infants 7-12 months	5 mg (7.5 IU)	5 mg (7.5 IU)
Children 1-3 years old	6 mg (9 IU)	6 mg (9 IU)
Children 4-8 years old	7 mg (10.5 IU)	7 mg (10.5 IU)
Children 9-13 years old	11 mg (16.5 IU)	11 mg (16.5 IU)
Teenagers 4-18 years old	15 mg (22.5 IU)	15 mg (22.5 IU)
Adults 19 years and older	15 mg (22.5 IU)	15 mg (22.5 IU)
Pregnant (any age)		15 mg (22.5 IU)
Breastfeeding mothers (any age)		19 mg (28.5 IU)

Scientists believe that there is strong evidence that daily intake of at least 200 IU (134 mg) of alpha-tocopherol may protect adults from certain chronic diseases such as heart problems, stroke, neurodegenerative diseases and certain types of cancer.

A major problem in formulating vitamin E recommendations is dependence on polyunsaturated fatty acid (PUFA) intake. There are large differences in PUFA consumption across Europe. Based on the proportional relationship between vitamin E requirement and PUFA, recommendations should take into account the different acid intake in different populations. Given the difficulty of achieving recommendations with optimal effects on human metabolism, the recommended daily intake of vitamin E for adults, expressed in milligrams of alpha - tocopherol equivalents (mg alpha-TEQ), differs in European countries:

- in Belgium, 10 mg per day;
- in France, 12 mg per day;
- in Austria, Germany, Switzerland - 15 mg per day;
- in Italy - more than 8 mg per day;
- in Spain, 12 mg per day;
- in the Netherlands - women 9.3 mg per day, men 11.8 mg per day;
- in the Nordic countries - women 8 mg per day, men 10 mg per day;
- in the UK - women over 3 mg per day, men over 4 mg per day ^[5,6].

Generally, we can get enough vitamin E from food. In some cases, the need for it may increase, for example, in severe chronic diseases:

- chronic pancreatitis;
- cholestatic syndrome;
- cystic fibrosis;
- primary biliary cirrhosis;
- Crohn's disease;
- irritable bowel syndrome;
- ataxia.

These diseases prevent the absorption of vitamin E in the intestine ^[7].

Chemical and physical properties

Vitamin E refers to all tocopherols and tocotrienols that exhibit alpha-tocopherol activity. Due to the phenolic hydrogen on the 2H-1-benzopyran-6-ol core, these compounds exhibit varying degrees of antioxidant activity depending on the location and number of methyl groups and the type of isoprenoids. Vitamin E is stable when heated to temperatures between 150 and 175°C. It is less stable in acidic and alkaline environments. α -Tocopherol has the consistency of a clear, viscous oil. It may break down during some types of food processing. At temperatures below 0° C, it loses its activity. Its activity adversely affects iron, chlorine and mineral oil. Insoluble in water, freely soluble in ethanol, miscible in ether. Color - from slightly yellow to amber, almost odorless, oxidizes and darkens when exposed to air or light ^[8,9].

The term vitamin E encompasses eight related, naturally occurring fat-soluble compounds: four tocopherols (alpha, beta, gamma, and delta) and four tocotrienols (alpha, beta, gamma, and delta). In humans, only alpha-tocopherol is selected and synthesized in the liver, so it is the most abundant in the body. The form of alpha-tocopherol found in plants is RRR-alpha-tocopherol (also called natural or d-alpha tocopherol). The form of vitamin E primarily used in fortified foods and nutritional supplements is all - rac -alpha-tocopherol (synthetic or dl -alpha-tocopherol). It contains RRR-alpha-tocopherol and seven very similar forms of alpha-tocopherol. All - rac -alpha-tocopherol is defined as slightly less biologically active than RRR-alpha-tocopherol, although this definition is currently being revised ^[10].

Useful properties and its effect on the body

Metabolism in the body

Vitamin E is a fat-soluble vitamin that is broken down and stored in body fat. It acts as an antioxidant, destroying free radicals that damage cells. Free radicals are molecules that have an unpaired electron, making them highly reactive. They feed on healthy cells during a series of biochemical processes. Some free radicals are natural by-products of digestion, others come from cigarette smoke, grill carcinogens, and other sources. Healthy cells damaged by free radicals can lead to the development of chronic diseases such as heart disease and cancer. Having enough vitamin E in the diet can serve as a preventative measure to protect the body from these diseases. **Optimal absorption is achieved when vitamin E is ingested with food** ^[11].

Vitamin E is absorbed into the intestines and enters the bloodstream through the lymphatic system. It is absorbed along with lipids, enters the chylomicrons and is transported to the liver with their help. This process is similar for all forms of vitamin E. Only after passing through the liver, α -tocopherol appears in plasma. Most of the consumed β -, γ - and δ -tocopherol is secreted into bile or not absorbed

and excreted from the body. The reason for this is the presence in the liver of a special substance - a protein that transports exclusively α -tocopherol, TTRA.

Plasma administration of RRR- α -tocopherol is a saturating process. Plasma levels stop rising at ~80 μ M when supplemented with vitamin E, even though doses are increased to 800 mg. Studies show that the limitation of plasma α -tocopherol concentration appears to be the result of a rapid replacement of circulating newly absorbed α -tocopherol. These data are consistent with kinetic analyzes demonstrating that the entire plasma composition of α -tocopherol is renewed daily ^[12].

Interaction with other elements

Vitamin E has an antioxidant effect when combined with other antioxidants, including beta-carotene, vitamin C, and selenium. Vitamin C can restore oxidized vitamin E to its natural antioxidant form. Megadoses of vitamin C may increase the need for vitamin E. Vitamin E may also protect against some of the effects of excess vitamin A and regulate vitamin A levels. Vitamin E is essential for the action of vitamin A, and a high intake of vitamin A can reduce the absorption of vitamin E.

Vitamin E may be needed to convert vitamin B12 to its active form and may reduce some of the symptoms of zinc deficiency. Large doses of vitamin E may interfere with the anticoagulant effect of vitamin K and may reduce intestinal absorption of vitamin K.

Vitamin E increases the absorption of vitamin A in the intestine at medium and high concentrations, up to 40%. A and E together lead to increased antioxidant capacity, protection against certain forms of cancer, and support for gut health. They work synergistically to prevent obesity, hearing loss, metabolic syndrome, inflammation, immune response, and brain health.

Selenium deficiency exacerbates the effects of vitamin E deficiency, which in turn can prevent selenium toxicity. A combined deficiency of selenium and vitamin E has a greater effect on the body than a deficiency of only one of the nutrients. The combined action of vitamin E and selenium may help prevent cancer by stimulating apoptosis in abnormal cells.

Inorganic iron interferes with the absorption of vitamin E and can destroy it. Vitamin E deficiency exacerbates iron excess, but supplemental vitamin E prevents it. It is best to take these supplements at different times ^[13,14].

Digestibility

Vitamins bring the greatest benefit if they are combined correctly. For the best effect, we recommend using the following combinations ^[15,16]:

- tomato and avocado;
- fresh carrots and nut butter;
- greens and salad with olive oil;
- sweet potato and walnut;
- sweet pepper and guacamole.

A combination of spinach (moreover, succumbing to heat treatment, it will have great nutritional value) and vegetable oil will be useful.

Natural vitamin E is a family of 8 different compounds - 4 tocopherols and 4 tocotrienols. This means that if you consume certain healthy foods, you will get all of these 8 compounds. In turn, synthetic vitamin E contains only one of these 8 components (*alpha-tocopherol*). Thus, a vitamin E tablet is not

always a good idea. Synthetic medicines cannot give you what natural sources of the vitamin can. There are a small number of medicinal vitamins that also contain vitamin E acetate and vitamin E succinate . While they are known to help prevent heart disease, we still recommend that you get your vitamin E from your diet ^[1] .

Application in official medicine

Vitamin E performs the following functions in the body:

- maintaining healthy cholesterol levels in the body;
- fighting free radicals and preventing the occurrence of diseases;
- restoration of damaged skin;
- maintaining hair density;
- balance of hormone levels in the blood;
- relief of symptoms of premenstrual syndrome;
- improvement of vision;
- slowing down the process of dementia in Alzheimer's disease and other neurodegenerative diseases;
- possible reduction in the risk of cancer;
- increased endurance and muscle strength;
- of great importance during pregnancy, growth and development.

Taking vitamin E in the form of a drug is effective in the treatment of:

- ataxia - a motor disorder associated with a lack of vitamin E in the body;
- vitamin E deficiency. In this case, as a rule, 60-75 International Units of vitamin E per day are prescribed.

In addition, vitamin E can help with diseases such as:

anemia, bladder cancer, dementia, dyspraxia (dysmotility), granulomatosis , Parkinson's disease

Name of the disease	Dosage
Alzheimer's disease, slowing down memory deterioration	up to 2000 International Units daily
beta thalassemia (blood disease)	750 IU per day;
dysmenorrhea (painful menstruation)	200 IU twice a day or 500 IU a day two days before period and for the first three days
male infertility	200 - 600 IU per day
rheumatoid arthritis	600 IU per day
sunburn	1000 IU combined + 2 grams of ascorbic acid
premenstrual syndrome	400 IU

Most often, the effectiveness of vitamin E in such cases is manifested in combination with other drugs. Before taking it is necessary to consult with your doctor ^[17] .

In pharmacology, vitamin E is found in the form of soft capsules of 0.1 g, 0.2 g and 0.4 g, as well as a solution of tocopherol acetate in oil in vials and ampoules, fat-soluble vitamins, powder for the manufacture of tablets and capsules with a content of 50% vitamin E. These are the most common forms of the vitamin. In order to convert the amount of a substance from International Units to mg, it is necessary to equate 1 IU to 0.67 mg (if we are talking about the natural form of the vitamin) or to 0.45 mg (synthetic substance). 1 mg of alpha-tocopherol is equal to 1.49 IU in natural form or 2.22 synthetic substances. The vitamin dosage form is best taken before or during meals ^[6].

Application in traditional medicine

Traditional and alternative medicine values vitamin E primarily for its nourishing, regenerative and moisturizing properties. Oils, as the main source of the vitamin, are very often found in folk recipes for various diseases and skin problems. For example, olive oil is considered an effective remedy for psoriasis - it moisturizes, soothes the skin and reduces inflammation. It is recommended to apply oil on the scalp, elbows and other affected areas.

For the treatment of various types of dermatitis, jojoba oil, coconut oil, wheat germ oil, grape seed oil are used. All of them help cleanse the skin, soothe inflamed areas and saturate the skin with beneficial substances.

Comfrey ointment, which includes vitamin E, is recommended for arthritis. To do this, first mix the leaves or roots of comfrey (1:1, as a rule, a glass of oil to 1 glass of the plant), then make a decoction from the resulting mixture (boil for 30 minutes). After that, the broth is filtered and a quarter cup of beeswax and a little pharmacy vitamin E are added. A compress is made from this ointment, kept on painful areas for a day ^[18].

Another of the many plants containing vitamin E is ivy. For treatment, the roots, leaves and branches of the plant are used, which are used as an antiseptic, anti-inflammatory effect, have expectorant, diuretic and antispasmodic effects. The decoction is used for rheumatism, gout, purulent wounds, amenorrhea and tuberculosis. It is necessary to use preparations from ivy with caution, since the plant itself is poisonous and is contraindicated in pregnancy, hepatitis and children ^[19].

Traditional medicine often uses walnuts as a remedy for many ailments. Like all nuts, it is a storehouse of vitamin E. Moreover, both ripe and unripe fruits, leaves, seeds, shells and seed oil are used. For example, a decoction of walnut leaves is used in the form of compresses to speed up wound healing. A decoction of unripe fruits is recommended to be drunk as tea three times a day for stomach diseases, parasites, scrofula, hypovitaminosis, scurvy and diabetes. Alcohol infusion is used for dysentery, pain in the organs of the urinary system. A tincture of golden mustache leaves, walnut kernels, honey and water is taken as a remedy for bronchitis. Unripe nuts in folk medicine are considered a powerful remedy for parasites. Walnut peel jam helps with inflammation of the kidneys and fibroids.

In addition, vitamin E is traditionally considered a fertility vitamin, it is used for ovarian failure syndrome, male and female infertility. For example, a mixture of evening primrose oil and pharmacy vitamin E is considered effective (1 tablespoon of oil and 1 vitamin capsule, taken for a month three times a day before meals).

A universal remedy is an ointment based on sunflower oil, beeswax and honey. Such an ointment is advised to be used externally (for the treatment of various skin lesions, from mastopathy) and internally (in the form of tampons for a runny nose, inflammation of the ears, diseases of the reproductive organs, as well as ingestion for constipation and peptic ulcers).

Vitamin E in scientific research

- A new study has identified genes that control the amount of vitamin E in corn grains, which can stimulate further improvement in the food and nutritional qualities of the product. Scientists conducted several types of analyzes to identify 14 genes that synthesize vitamin E. Recently, six protein-coding genes responsible for the synthesis of vitamin E have been discovered. Breeders are working to increase the amount of provitamin A in corn, while increasing the composition of vitamin E. and tocopherols are essential for seed viability. They prevent oil from settling in seeds during storage, germination and early seedlings ^[20].
- Vitamin E is so popular among bodybuilders for a reason - it really helps maintain muscle strength and health. Scientists have finally managed to understand how this happens. Vitamin E has long established itself as a powerful antioxidant, and it has recently been studied that without it, the plasma membrane (which protects the cell from leakage of its contents, and also controls the flow and release of substances) would not be able to fully recover. Since vitamin E is fat soluble, it can actually be incorporated into the membrane, protecting the cell from free radical attack. It also helps preserve phospholipids, one of the most important cellular components responsible for repairing cells after damage. For example, during exercise, mitochondria burn much more oxygen than usual, leading to more free radical production and membrane damage. Vitamin E ensures their full recovery, despite increased oxidation, keeping the process under control ^[21].
- Vitamin E-deficient zebrafish produced offspring with behavioral and metabolic problems, according to a new study from the University of Oregon. These findings are significant because the neurological development of zebrafish is similar to human neurological development. The problem can be exacerbated in women of childbearing age, who avoid high-fat foods and avoid oils, nuts and seeds, which are among the foods with the highest levels of vitamin E, an antioxidant essential for normal embryonic development in vertebrates. Embryos lacking vitamin E had more deformities and a higher death rate, as well as an altered DNA methylation status as early as five days after fertilization. Five days is the time it takes for a fertilized egg to become a swimming fish. The results of the study suggest that vitamin E deficiency in zebrafish produces long-term impairments that are not remedied even with later dietary vitamin E supplementation ^[22].
- A new discovery by scientists proves that eating a salad with the addition of vegetable fat helps the absorption of eight nutrients. And eating the same salad, but without oil, we reduce the body's ability to absorb trace elements. Some types of salad dressings can help you absorb more nutrients, according to research. Researchers have found increased absorption of several fat-soluble vitamins in addition to beta-carotene and three other carotenoids. Such a result may reassure those who, even when on a diet, cannot resist adding a drop of oil to a light salad ^[23].
- Preliminary evidence suggests that antioxidant vitamin E and selenium supplements - alone or in combination - do not prevent dementia in asymptomatic older men. However, such a conclusion cannot be conclusive due to insufficient study, enrollment of only males, short drug exposure times, different dosages, and methodological limitations based on actual incident reporting ^[24].

Use in cosmetology

Due to its valuable properties, vitamin E is very often an ingredient in many cosmetics. In its composition, it is indicated as "**tocopherol**" ("*tocopherol*") or "**tocotrienol**" ("*tocotrienol*"). If the name is preceded by a "d" prefix (for example, d - alpha - tocopherol), then the vitamin is derived from natural sources; if the prefix is "dl", then the substance was synthesized in the laboratory. Cosmetologists appreciate vitamin E for the following characteristics:

- vitamin E is an antioxidant and destroys free radicals;
- it has sunscreen properties, namely, it increases the effectiveness of the sunscreen effect of special creams, and also alleviates the condition after sunburn;

- has moisturizing qualities - in particular, alpha-tocopherol acetate which strengthens the natural skin barrier and reduces the amount of fluid lost;
- an excellent preservative that protects active ingredients in cosmetics from oxidation ^[25] .

There are also a very large number of natural recipes for skin, hair and nails that effectively nourish, restore and tone them. The easiest way to care for the skin is to massage various oils into the skin, and for the hair, apply the oil to the entire length of the hair for at least an hour before washing once or twice a week. If you have dry or flaccid skin, try using a mixture of rose oil and pharmacy vitamin E to stimulate collagen production. Another anti-aging recipe includes cocoa butter, sea buckthorn and tocopherol solution. A mask with aloe vera juice and a solution of vitamin E, vitamin A and a small amount of nourishing cream nourishes the skin. An exfoliating universal effect will bring an egg white mask, a spoonful of honey and a dozen drops of vitamin E.

Dry, normal and combination skin will be transformed by a mixture of banana pulp, high fat cream and a few drops of tocopherol solution. If you want to give your skin an extra tone, mix the pulp of a cucumber and a couple of drops of an oil solution of vitamin E. An effective mask with vitamin E for wrinkles is a mask with pharmacy vitamin E, potato pulp and parsley sprigs. A mask consisting of 2 milliliters of tocopherol, 3 teaspoons of red clay and anise essential oil will help get rid of acne. For dry skin, try mixing 1 ampoule of tocopherol and 3 teaspoons of kelp - this mask will moisturize and restore the skin.

If you have oily skin, use a mask that contains 4 milliliters of vitamin E, 1 crushed activated charcoal tablet and three teaspoons of ground lentils. For aging skin, a sheet mask is also used, which includes wheat germ oil with the addition of other essential oils - rose, mint, sandalwood, neroli .

Vitamin E is a powerful stimulant for the growth of eyelashes: castor oil, burdock, peach oil are used for this, which are applied directly to the eyelashes.

For the health and beauty of hair, masks containing vitamin E are indispensable. For example , a nourishing mask with jojoba oil and burdock oil. For dry hair, a mask of burdock, almond and olive oils, as well as an oil solution of vitamin E, is suitable . If you notice that your hair has begun to fall out, try applying a mixture of potato juice, aloe vera juice or gel, honey and pharmacy vitamins E and A. To add shine to your hair, you can mix olive and burdock oil, vitamin E oil solution and one egg yolk. And, of course, we must not forget about wheat germ oil - a vitamin "bomb" for hair. To refresh and add shine to your hair, combine banana pulp, avocado, yogurt, vitamin E oil solution and wheat germ oil. All of the above masks should be applied for 20-40 minutes, wrapping the hair with a plastic bag or cling film, and then rinse with shampoo.

To keep your nails healthy and beautiful, it is useful to apply the following masks:

- sunflower or olive oil, a few drops of iodine and a few drops of vitamin E - will help with exfoliating nails;
- vegetable oil, an oil solution of vitamin E and a little red pepper - to accelerate the growth of nails;
- walnut oil, vitamin E and lemon essential oil - from brittle nails;
- olive oil and vitamin E solution - to soften the cuticles.

Use in animal husbandry

All animals need adequate levels of vitamin E in the body to support healthy growth, development and reproduction. Stress, exercise, infection and tissue injury increase the animal's need for the vitamin.

It is necessary to ensure its intake through food - fortunately, this vitamin is widely distributed in nature. Vitamin E deficiency in animals manifests itself in the form of diseases, most often attacking body tissues, muscles, and also manifests itself in the form of apathy or depression ^[36].

Use in crop production

A few years ago, researchers at the University of Toronto and Michigan made a discovery about the benefits of vitamin E for plants. As it turned out, the addition of vitamin E to the fertilizer will reduce the susceptibility of plants to cold temperatures. As a result, this makes it possible to discover new, cold-resistant varieties that will bring a better harvest. Gardeners who live in colder climates can experiment with vitamin E and see how it affects plant growth and longevity ^[27].

The use of vitamin E in industry

Vitamin E is widely used in the cosmetic industry - it is a very common component of creams, oils, ointments, shampoos, masks, etc. In addition, it is used in the food industry as a food additive E307. This supplement is completely harmless and has the same properties as a natural vitamin ^[28].

Contraindications and warnings

Vitamin E is a fat-soluble vitamin, it is not destroyed when exposed to sufficiently high temperatures (up to 150-170°C). It is exposed to ultraviolet rays and loses its activity when frozen.

Signs of vitamin E deficiency

True vitamin E deficiency is very rare. Overt symptoms have not been found in healthy people receiving at least a minimal amount of the vitamin from food.

Vitamin E deficiency can be experienced by premature infants born weighing less than 1.5 kg. Also, people who have problems with the absorption of fat in the digestive tract are at risk of developing a vitamin deficiency. Symptoms of vitamin E deficiency are peripheral neuropathy, ataxia, skeletal myopathy, retinopathy, and impaired immune response. The following symptoms may also be a sign that your body is not getting enough vitamin E:

- difficulty walking and difficulty in coordination;
- muscle pain and weakness;
- visual disturbances;
- general weakness;
- decrease in sexual desire;
- anemia.

If you notice one of these symptoms, it is worth considering a visit to the doctor. Only an experienced specialist will be able to determine the presence of a particular disease and prescribe the appropriate treatment. As a rule, vitamin E deficiency occurs as a result of genetic diseases such as Crohn's disease, ataxia, cystic fibrosis and other diseases. Only in this case, large doses of medicinal vitamin E supplements are prescribed.

Precautionary measures

For most healthy people, vitamin E is very beneficial, both when taken orally and when applied directly to the skin. Most people do not experience any side effects at the recommended dose, but adverse reactions may occur at high doses. It is dangerous to exceed the dose if you suffer from heart

disease or diabetes. In this case, the dose of 400 International Units (about 0.2 grams) per day should not be exceeded.

Some studies show that taking high doses of vitamin E, which is between 300 and 800 IU each day, can increase the chance of a hemorrhagic stroke by 22%. Another serious side effect of consuming too much vitamin E is an increased risk of bleeding.

Avoid taking supplements containing vitamin E or any other antioxidant vitamins immediately before and after angioplasty .

Very high vitamin E supplements can potentially lead to the following health problems:

- heart failure in people with diabetes;
- worsening bleeding;
- the risk of recurrence of cancer of the prostate, neck and head;
- increased bleeding during and after surgery;
- an increased chance of dying from a heart attack or stroke.

One study found that vitamin E supplements can also be harmful for women who are in the early stages of pregnancy. High doses of vitamin E can also sometimes lead to nausea, diarrhea, abdominal cramps, fatigue, weakness, headache, blurred vision, rash, bruising, and bleeding.

Interaction with other drugs

Since vitamin E supplements can slow blood clotting, they should be taken with caution with similar medications (aspirin, clopidogrel , ibuprofen, and warfarin) as they can markedly increase this effect.

Cholesterol-lowering medications can also interact with vitamin E. It is not known for sure whether the effectiveness of such medications is reduced when taking vitamin E alone, but in combination with vitamin C, beta-carotene and selenium, this effect is very often observed ^[6, 7,29] .

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Vitamin E - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of the vitamin E and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The best natural sources of vitamin E are indicated. The use of the vitamin in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of vitamin E on the human body under certain medical conditions and diseases are analyzed separately.