

Pumpkin (lat. Cucurbita)

Eliseeva Tatyana, editor-in-chief of the project EdaPlus.info

Yampolsky Alexey, nutritionist

Email: eliseeva.t@edaplus.info, yampolsky.a@edaplus.info

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

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		

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

• 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 b-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 it. 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 graygreen 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-Francian 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.

Literature

- 1. Gibbon, Guy E.; Ames, Kenneth M. Archeology of Prehistoric Native America: An Encyclopedia. New York : Routledge , 1998. ISBN 978-0-815-30725-9. P. 238.
- Bernardino de Sahagun . A general history of the affairs of New Spain. Books X-XI: Knowledge of the Aztecs in medicine and botany / Ed. and trans. S. A. Kuprienko. - Kiev: Vidavets Kuprienko S. A., 2013. - 218 p. - (Mesoamerica . Sources. History. Man). - ISBN 978-617-7085-07-1.
- 3. Malozyomov S. Food alive and dead. 5 principles of healthy eating, M., Eksmo , 2018. 288 p.
- 4. Khusid S. B., Nikolaenko S. N., Donskov Ya. P. Changes in the chemical composition of
- pumpkin fruits during storage // Young scientist. 2015. No. 3. S. 377-381.
- 5. National Nutrient Database, source
- 6. National Nutrient Database, source
- 7. National Nutrient Database, source
- 8. National Nutrient Database, source
- 9. National Nutrient Database, source
- Parfyonova T. V., Novitskaya E. G., Boyarova M. D., Bardina N. V., Zadorozhny P. A. Properties of pumpkin peel and the possibility of its use for food and fodder purposes // Storage and processing of agricultural raw materials . - 2016 - No. 2. - S. 18-21.
- 11. National Nutrient Database, source
- 12. National Nutrient Database, source
- 13. National Nutrient Database, source
- 14. National Nutrient Database, source
- 15. Eskenazi B. et al. Antioxidant intake is associated with semen quality in healthy men. Hum Reprod 2005;20:1006–1012.
- 16. Minguez-Alarcon L. et al. Dietary intake of antioxidant nutrients is associated with semen quality in young university students. Hum reproduction 2012;27: 2807–2814.
- 17. Eslamian G. et al. Nutrient patterns and asthenozoospermia : a case-control study. Andrologia 2017 Apr; 49(3). doi : 10.1111/and.12624. Epub 2016 Jun 1.
- Blinova K.F. et al. Botanical- pharmacognostic dictionary: Ref. allowance / Ed. K. F. Blinova , G. P. Yakovlev. - M .: Higher . school ., 1990. - S. 248.
- 19. Rogers, Nicholas (2002). Halloween: From Pagan Ritual to Party Night, pp. 29, 57. New York : Oxford University Press . ISBN 0-19-516896-8.
- 20. Arnold, Bettina Bettina Arnold Halloween Lecture: Halloween Customs in the Celtic World. Halloween Inaugural Celebration. University of Wisconsin–Milwaukee: Center for Celtic Studies.
- 21. Uwitonze BUT M , Razzaque M S. Role of Magnesium in Vitamin D Activation and Function. The Journal of the American Osteopathic Association , 2018
- 22. Choi S., Cui C., Luo Y., Kim SH., Ko JK., Huo X., Ma J., Fu LW., Souza R F., Korichneva I., Pan Z. Selective inhibitory effects of zinc on cell proliferation in esophageal squamous cell carcinoma through Orai1. The FASEB Journal , 2017
- 23. Iskandar AR, Miao B., Li X., Hu K.-Q., Liu C., Wang X.-D. Cryptoxanthin Reduced Lung Tumor Multiplicity and Inhibited Lung Cancer Cell Motility by downregulating Nicotinic Acetylcholine Receptor. Cancer prevention Research , 2016
- 24. Baylor University. Pumpkin foods may not live up to healthy reputation. ScienceDaily , October 12 , 2015, <u>source</u>
- 25. Glushchenko N., Lobaeva T., Bogoslovskaya O., Olkhovskaya I. Study of physicochemical characteristics and regenerating activity of pumpkin oil extract. Bulletin of the Peoples' Friendship University of Russia. Series: Medicine.
- 26. Samet C., Valiyaveettil S. Fruit and Vegetable Peels as Efficient Renewable Adsorbents for Removal of Pollutants from Water: A Research Experience for General Chemistry Students. Journal of Chemical Education, 2018

An extended HTML version of the article is available on the edaplus website . info .

Pumpkin - useful properties, composition and contraindications

Eliseeva Tatyana, editor-in-chief of the project EdaPlus.info

Yampolsky Aleksey, nutritionist

E-mail: eliseeva.t@edaplus.info, yampolsky.a@edaplus.info

Received 10/25/18

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.