

## CHEMICAL COMPOSITION AND MEDICINAL PROPERTIES OF WATERMELON

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### ABSTRACT

*In the article given information on the chemical composition and healing properties of watermelon. Here are the rules of daily consumption of watermelon and how much of it can replenish the body.*

**KEYWORDS:** *Watermelon, Lipid, Protein, Carbohydrates, Water, Potassium, Magnesium.*

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### INTRODUCTION

Watermelon (Citrullus) - a family of annual and perennial herbaceous plants belong to the family of squash, melon. Homeland - Africa (Egypt). It has been cultivated in India for 3,000 years. Widespread in India, America, Europe, China, Turkey, Iran, Japan and Australia. In Central Asia, watermelon is the second largest melon crop in the world after melons. Cultivated watermelon food (S. aedulis Pand.), Simple (S. colocynthoides Pand.) Types, the fruit of wild watermelon is known 4 types of bitter.

Watermelon`s peel is thick (1.5 cm), medium (1.1.5 cm), thin, hard. The flesh of the red fruit is soft, waterly, juicy, sandy, and sometimes fibrous. The color of the flesh is red, some varieties are raspberry. Seeds, white, yellow, black, red, gray. 1000 seeds weigh 40-120 g. The fruit contains 8.0-13.5% dry matter, 5.8-11% sugar (fructose; 3.2-5% dry matter in watermelon, 1.2-3% sugar, 0.09 nutrients per 1 kg ), More than 90% water, various vitamins (B1, B2, PP) and mineral salts, the seeds contain 25-30% fat, phytine acid. Watermelon is a heat-loving, light-loving plant, drought-resistant, the seeds begin to germinate at a soil temperature of 14–16 ° (favorable conditions 20 °). It germinates in 5-6 days after planting. There are early, middle and late varieties of watermelon. Early maturing varieties ripen in 80-90 days, medium ripening varieties in 90-100 days and late ripening varieties in 110-120 days [1,2,3].

Watermelon is a favorite summer dish for adults and children. However, not only the flesh part of watermelon, but also the peel and seeds can be eat.

In China, watermelon seeds are consumed as much as sunflower or pumpkin seeds. And not in vain, because they have anthelmintic effect, help to improve the vascular system, strengthen heart function. A quarter of watermelon seeds are oily and are used in food in some countries.

**Literature review and methodology.** Watermelons significantly improve the digestive process. Watermelon fruit fiber is an excellent stimulator of beneficial intestinal microflora. Watermelon is an alkaline product, it neutralizes the negative effects of egg, meat, bread, fish acids. Watermelon is rich in folic acid, which is necessary for the normal functioning of everyone, as it is involved in hematopoiesis, as well as the synthesis of amino acids. Folic acid is a stimulator of fat metabolism, has a pronounced sclerotic effect. The effect of folic acid is significantly enhanced by vitamins C, P, choline.

Watermelon reduces the negative effects of drug treatment, as well as anesthesia, it is useful to consume it after surgery and after a long illness [3,4,5].

**TABLE 1. CHEMICAL COMPOSITION OF WATERMELON**

<b>Nuyurient</b>	<b>Amount in 100 g of fruit</b>	<b>Daily need</b>	<b>% Of need per 100 g</b>	<b>% Of the need in 100 kcal</b>	<b>G of 100 kcal norm</b>
<b>Calories</b>	27 kcal	1684 kcal	1.6%	5.9%	6237 g
<b>Proteins</b>	0.7 g	76 g	0.9%	3.3%	10857 g
<b>Fats</b>	0.1 g	56 g	0.2%	0.7%	56000 g
<b>Carbohydrates</b>	5.8 g	219 g	2.6%	9.6%	3776 g
<b>Dietary fiber</b>	0.4 g	20 g	2%	7.4%	5000 g
<b>Water</b>	92.6 g	2273 g	4.1%	15.2%	2455 g
<b>Omega-3 fatty acids</b>	0.019 g	0.9-3.7g	2.1%	7.8%	
<b>Omega-6 fatty acids</b>	0.05 g	4.7-16.8 g	1.1%	4.1%	

**TABLE 2.VITAMINS**

<b>Nuyurient</b>	<b>Amount in 100 g of fruit</b>	<b>Daily need</b>	<b>% Of need per 100 g</b>
<b>Vitamin A</b>	17 mcg	900 mcg	1.9%
<b>Beta carotene</b>	0.1 mg	5 mg	2%
<b>Vitamin B1, thiamine</b>	0.04 mg	1.5 mg	2.7%
<b>Vitamin B2, riboflavin</b>	0.06 mg	1.8 mg	3.3%
<b>Vitamin B4, choline</b>	4.1 mg	500 mg	0.8%
<b>Vitamin B5</b>	0.221 mg	5 mg	4.4%
<b>Vitamin B6, pyridoxine</b>	0.09 mg	2 mg	4.5%
<b>Vitamin B9, folates</b>	8 mcg	400 mcg	2%
<b>Vitamin C, ascorbic acid</b>	7 mg	90 mg	7.8%
<b>Vitamin E, alpha tocopherol</b>	0.1 mg	15 mg	0.7%
<b>Vitamin K, phylloxinone</b>	0.1 mcg	120 mcg	0.1%
<b>Vitamin PP</b>	0.3 mg	20 mg	1.5%

Depending on the solvent of vitamins are divided into two:

1. Water-soluble vitamins- All B vitamins, PP and C vitamins.
2. Fat-soluble vitamins - A, E, K, D and beta-carotene.

### **DISCUSSION**

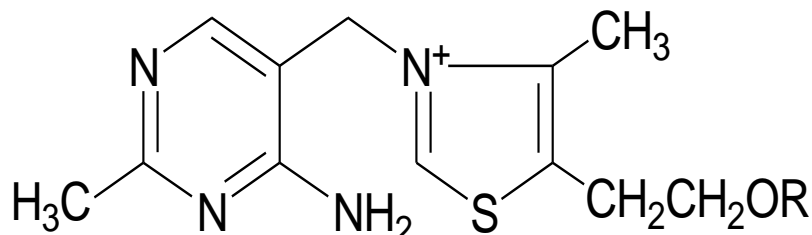
Vitamin A, (Retinol) - Retinol (vitamin A) is common in nature. Occurs in plant tissues in the form of provitamin A (carotenoid pigments that are converted to retinol in the body). Participates in the formation of visual pigments, ensures the normal growth of the organism, the adaptation of the eye to different levels of light. When there is a lack of retinol in the body, the skin becomes dry and white, itchy, itchy, small rashes appear, purulent diseases of the skin develop, hair becomes dry, dull, begins to fall out, nails become brittle. Not being able to look at the light, shabkoryaik mainly causes vitamin A deficiency. Provitamin A (carotene) is abundant in plants, especially in their green leaves, vitamin A in animal and fish liver, fish oil.

Vitamin E has antioxidant properties, is a universal stabilizer of cell membranes for the functioning of the gonads, heart muscle. Hemolysis of erythrocytes and nerve diseases are observed with vitamin E deficiency.

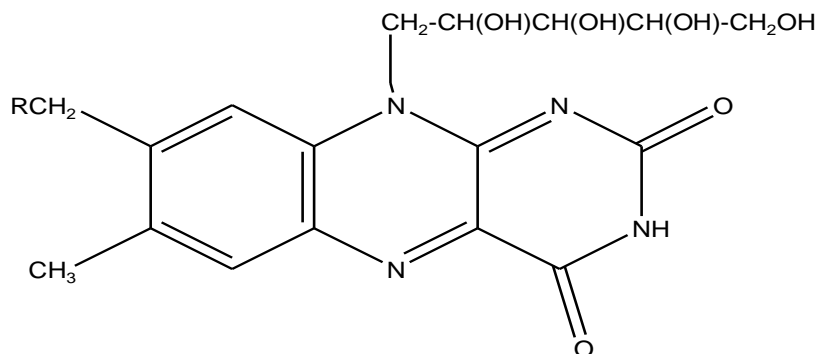
Vitamin B<sub>1</sub> (Thiamine), (former name - aneurine) - an organic heterocyclic compound, a water-soluble vitamin. A colorless crystalline substance that is easily soluble in water and insoluble in alcohol (it also contains a fat-soluble analogue of vitamin B<sub>1</sub> (thiamine) - benfotiamine). In an acidic environment, aqueous solutions of thiamine can withstand heating to high temperatures without reducing biological activity. In a neutral and especially alkaline environment, vitamin B<sub>1</sub>, by contrast, is rapidly destroyed by heating. B<sub>1</sub> deficiency is characterized by the development of weakness, weight loss, muscle atrophy, neuritis, mental illness, disorders of the digestive and cardiovascular systems, paresis and paralysis. The main amount of thiamine is

obtained from plant nutrients. The amount of thiamine is more common in wholemeal bread, wheat bread, soy, beans, peas and spinach.

Occurs in small quantities in potatoes, carrots, cabbage.



Vitamin B<sub>2</sub> - (riboflavin) Vitamin B<sub>2</sub> deficiency causes metabolism and all kinds of changes in the skin. Acute riboflavin deficiency is associated with impaired iron metabolism, anemia, and mental illness. The best sources of vitamin B<sub>2</sub> are liver, yeast, almonds, eggs, kale, cheese, spinach, rye bread, broccoli, dried apricots and plums, herring, avocados, pork, beans, turkey, nuts, seeds.

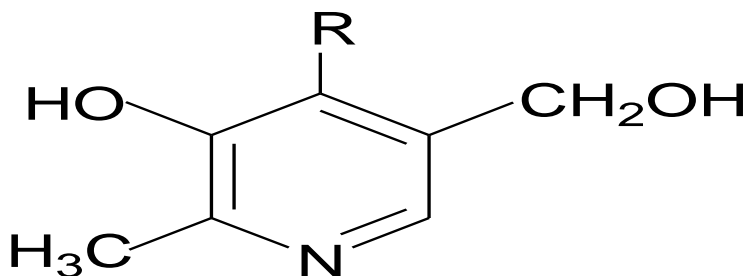


Vitamin B<sub>5</sub> (pantothenic acid) is a water-soluble vitamin common in food products. Its main sources for humans are liver, kidneys, egg yolk and bran bread. In addition, it is produced in large quantities by the intestinal flora.

Vitamin B<sub>6</sub> or adermin - (pyridoxine, pyridoxal, pyridoxamine) is present in many foods. They are especially rich in whole grains, nuts and hazelnuts, spinach, potatoes and sweet potatoes, carrots, cauliflower and white cabbage, tomatoes, strawberries, cherries, oranges and lemons, avocados, meat and dairy products, fish, eggs, grains less.

Symptoms of B<sub>6</sub> deficiency in humans include microcytic anemia, dermatitis, including cheilitis (seizures in the corners of the mouth), seborrhea and glossitis (swelling of the tongue), depression, lethargy, confusion, and weakened immunity; children also have nervousness, increased hearing, convulsions.

The vitamin B<sub>6</sub> test is a blood test for pyridoxal phosphate with liquid chromatography.

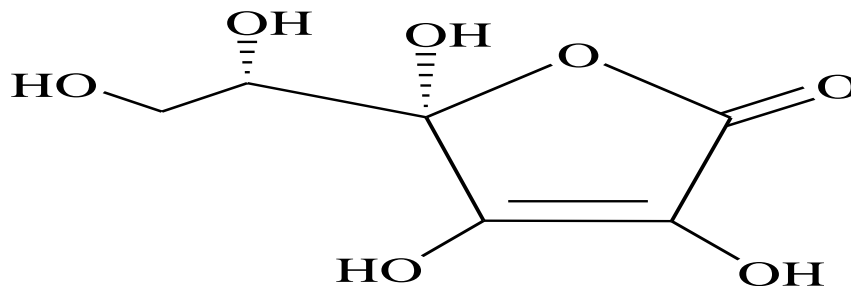


Vitamin B<sub>9</sub> (Folic Acid) - Animals and humans get folic acid through food or through the synthesis of intestinal microflora. Folic acid is found in large amounts in leafy green vegetables, some citrus fruits, legumes, wholemeal bread, yeast, liver and honey. In many countries, legislation enriches flour manufacturers to enrich grains with folic acid. Some folates are destroyed during cooking.

Folate deficiency can cause megaloblastic anemia in adults, and folic acid intake during pregnancy reduces the risk of developing fetal neural tube defects.

Vitamin C (ascorbic acid) - A powerful antioxidant, prevents the fragility of small and medium-sized blood vessels, participates in redox reactions, the functioning of the immune system, promotes the absorption of iron;

Vitamin C is a major water-soluble antioxidant in blood and tissue cells. Vitamin C deficiency impairs the development and function of skin, gums, teeth, bones, normal wound healing, impairs the body's resistance to viruses, reduces the synthesis of steroid hormones, disrupts the synthesis of bile acids from cholesterol and regulates blood cholesterol levels. Vitamin C is mostly found in fruits and vegetables, kiwi fruit, rose hip, peppers, black currants, strawberries, red currants, cabbage, broccoli, raspberries, tomatoes, cauliflower.



**TABLE 3.MACRO- AND MICROELEMENTS**

<b>Nuyurient</b>	<b>Amount in 100 g of fruit</b>	<b>Daily need</b>	<b>% Of need per 100 g</b>
<b>Potassium, K</b>	110 mg	2500 mg	4.4%
<b>Calcium, Ca</b>	14 mg	1000 mg	1.4%
<b>Silicon, Si</b>	12 mg	30 mg	40%
<b>Magnesium, Mg</b>	12 mg	400 mg	3%
<b>Sodium, Na</b>	16 mg	1300 mg	1.2%
<b>Oltingugurt, S</b>	6.1 mg	1000 mg	0.6%
<b>Phosphorus, P</b>	7 mg	800 mg	0.9%
<b>Chlorine, Cl</b>	24.7 mg	2300 mg	1.1%
<b>Iron, Fe</b>	1 mg	18 mg	5.6%
<b>Iodine, I</b>	0.02 mcg	150 mcg	
<b>Cobalt, Co</b>	2 mcg	10 mcg	20%
<b>Marganes, Mn</b>	0.038 mg	2 mg	1.9%
<b>Mis, Cu</b>	42 mcg	1000 mcg	4.2%
<b>Molybdenum, Mo.</b>	1.8 mcg	70 mcg	2.6%
<b>Selen, Se</b>	0.4 mcg	55 mcg	0.7%
<b>Ftor, F</b>	1.5 mcg	4000 mcg	
<b>Chrome, Cr</b>	0.23 mcg	50 mcg	0.5%
<b>Zinc, Zn</b>	0.1 mg	12 mg	0.8%

- Phosphorus- 100 g of pumpkin seeds contain more than some fish species
- Magnesium is a part of DNA, protein and bone structure; regulates the work of muscles and nerve fibers; stabilizes blood pressure; normalizes blood sugar
- Manganese - is involved in skeletal growth and development; Participates in hematopoiesis, supports reproductive functions, regulates lipid and carbohydrate metabolism
- Potassium is involved in muscle function; regulates the volume of fluid in the body, the balance of minerals; maintains blood pressure.
- Normalizes iron content, enriches it with oxygen
- Zinc- By the way, the World Health Organization recommends the use of pumpkin seeds as a good way to replenish zinc, which strengthens the immune system, is involved in the prevention and strengthening of prostatitis. bone tissue
- Calcium - an active participant in the coordination of intracellular processes; nerve conduction, muscle contraction, maintenance of cardiovascular function, bone formation and mineralization of teeth, blood clotting.
- Copper is necessary for the body to absorb iron, maintain blood pressure and participate in the metabolism of cholesterol and glucose.
- Selenium - strengthens the body's defenses or human immunity [4,6,7,8,9].

Decoction made from watermelon seeds and fresh watermelon peel has a very good diuretic effect. Watermelon peel is dried and used to prepare such decoctions in winter.

In diseases of the kidneys, heart and blood vessels, liver is used decoction of the flesh and skin of watermelon.

### **Result.**

As mentioned above, watermelon seeds contain folic acid, which is found in other vegetables (potatoes, cauliflower, etc.), but all of them are cooked and folic acid is destroyed during heat treatment. This is important because it is involved in the regulation of hematopoiesis and many biochemical processes in the body. Therefore, watermelon is used for therapeutic purposes for anemia of various origins, diseases of the blood and blood-forming organs, and the consequences of radiation therapy.

Watermelon root and seeds are used for breast tumors. Watermelon sugar in cancer is a product rich in easily digestible fructose and glucose, macro- and micronutrients.

Watermelon sugar is made only from ripe sweet watermelons. The fruit mass is crushed, filtered through a sieve or strainer, filtered through a 2-layer gauze and put on fire. The foam formed during boiling is removed, the juice is filtered again and then put on a slow fire and evaporated, stirring constantly. When the volume of juice is reduced by 5–6 times, check the readiness of the syrup with a drop. Watermelon sugar is stored in jars, tied with a clean cloth or covered with a lid (not hermetically sealed). The inside of the fruit, and especially the watermelon juice, is an excellent means of relieving thirst, especially in the case of fever. In Chinese medicine, watermelon seeds are widely used as a health-promoting tool.

When the kidneys swell, chop the dried watermelon peel, pour 2 cups boiling water into 5 tablespoons of boiling water, close the lid and wait until cool. Drink 0.5 cups 4 times a day.

In the treatment of helminthiasis dry watermelon seeds in the oven, grind with a meat grinder, mix with milk in a ratio of 1:10. Drink 2-3 times a day. Drinking 2 glasses at a time between meals is a good benefit.

Grind fresh watermelon seeds 100 g (5 tablespoons) pour 1 liter of cold water, bring to a boil. Bring to a boil for 45 minutes, then stir during the boiling phase and bring to a boil. Drink 1 glass 3 times a day.

In the treatment of heart disease we squeeze watermelon juice, add 2 apple juice (approximately equal). Drink every day in the fall.

In the treatment of hemorrhoids it is better to put tampons with watermelon juice on the nodes. Stops bleeding well.

When kidney stones accumulate, watermelon peel is dried and used for winter treatment. Drinking a tincture made from it helps to dissolve kidney stones and prevents the development of the disease. If there are stones in the kidneys, the urinary tract and salts in the kidneys dissolve under the influence of the alkaline environment of the urine, an alkaline environment is formed when he consumes watermelon.

Watermelon peel can be used in the treatment and prevention of diabetes mellitus in the treatment and prevention of diabetes. It is very useful to drink a quarter of a glass of juice from a green watermelon peel 4 times a day. Watermelon has almost no sugar.



Watermelon peel can be used in kidney and gallbladder diseases in the treatment of kidney and gallbladder diseases. Patients are advised to drink tea from watermelon peel regularly. Cook the dry mass of two tablespoons of bark with a glass of boiling water and leave for 30 minutes. Drink watermelon tea 20 minutes before each meal.

When the kidneys swell, chop the dried watermelon peel, pour 2 cups boiling water into 5 tablespoons boiling water, close the lid and wait until cool. Drink 0.5 cups 4 times a day.

In inflammation of the intestine is obtained strong tea from watermelon peel. Drinking one-third of a cup of this tea every 2 hours will alleviate the aggravation of diseases and inflammation of the intestine. Drink it every day until the symptoms of the disease disappear.

In a headache, a thick peel of watermelon is tied to the forehead. The pain goes back and doesn't bother me for long.

The benefits of watermelon peel in cervical osteochondrosis have a significant impact on those suffering from cervical osteochondrosis. To prepare the bath, you need to add to the water 200 grams of fresh watermelon juice, freshly ground peeled steamed with boiling water and baking soda at a temperature of 36.90C.

In the treatment of sore throat and tuberculosis, fresh watermelon peel is taken and the thick skin is cut. Grind them in a grinder, then squeeze the juice and use it to rinse the throat every hour.

In colitis - add watermelon peel (100 g) to boiling water (500 ml), boil it and drink 4–5 times a day.

We can make delicious sugar jam from watermelon peel. Jam made from watermelon peel is an excellent prophylactic tool against colds and urinary tract diseases [1,2,10].

#### *Jam made from watermelon peel*

1 kg of watermelon is taken from the peel and the peel is arched using a potato arch. The peeled skin is cut into cubes. To it add 1–1.5 kg of sugar. Top with 3 cups of water and a teaspoon of baking soda. Boil on low heat for 4 hours.

Dry the watermelon peel

To prepare for winter, the shells should be thoroughly washed, cleaned of green thin coating. It is dried for 12 hours in the range of 30-400. Dried shells can be stored in a cloth bag.

Watermelon peel in the form of dried, boiled and jam can be used in the treatment and prevention of diseases. Rich in vitamins and minerals, it boosts a person's immunity and prevents and treats diseases.

Antimicrobial and antifungal effect - Watermelon seed oil is a means of combating bacteria and fungi, especially *Escherichia coli*.

Antioxidant effect - Watermelon seed oil is a powerful antioxidant. Increases human immunity.

Anti-diabetic effect - watermelon seed oils affect the cells of the pancreas and prevent their disease. Therefore, they are important in the treatment of type 1 diabetes. They have the effect of lowering blood glucose levels and increasing insulin levels.



Effects of watermelon seeds on the treatment of gastrointestinal ulcers - Studies in rats have shown that an extract from these seeds is effective in the treatment of gastric ulcers compared to standard drugs.

In addition to its scientifically proven health benefits, watermelon seed oils have other benefits derived from their vitamins, minerals, and antioxidants.

- Hair Strengthening - Iron in the bones promotes rapid hair growth and magnesium and copper are responsible for its healthy appearance and rich color. Fatty acids moisturize hair, prevent dryness, breakage and split ends.
- Shiny skin - unsaturated fatty acids prevent dehydration and cracking of the skin and make the face a healthy and gray complexion.
- Antioxidants protect against wrinkles, aging spots and premature aging.
- Magnesium, potassium, and iron in the oil for the cardiovascular system are essential for the proper functioning of the heart and cardiovascular system, and arginine helps lower blood pressure levels.
- Positive effect on the nervous system - due to magnesium and B vitamins.

## CONCLUSION

Watermelons and other melons and vegetables have the ability to accumulate chemicals (nitrate, etc.) used as fertilizers in fruits or root crops. After cutting such a watermelon, yellow, slightly compressed areas appear in the pulp in the range of 0.3 - 0.5 cm to 2x2 cm and more. Taking such a watermelon can cause nausea, vomiting, upset stomach and diarrhea, even in healthy people. It is more dangerous for young children and kidney patients. Severe dyspeptic disorders can occur in children, in some cases - convulsions and dehydration. In patients with kidney disease, renal colic and a sharp deterioration in health develop very rapidly.

In short, watermelon is rich in many vitamins and minerals, which enhances human immunity. Watermelon can be used in the prevention and treatment of many diseases [1,2,6,8,11].

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