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EXPERIMENTAL STUDIES TO ASSESS THE EFFECTIVENESS OF "PUMPKIN OIL WITH ZINC" AND "PUMPKIN OIL WITH VITAMIN E"

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Abstract

Pumpkin is a popular and healthy vegetable that can be used to prepare a variety of delicious dishes. Pumpkin seeds, from which extract (a concentrated powder with a light nutty flavor) and oil are obtained, also have enormous nutritional value. People have used them as medicines for many centuries. Thus, in the century before last and the last century, this product was used to treat and prevent worms. It was also used in the treatment of many infectious diseases [1].

Of course, not everyone can easily eat a handful of pumpkin seeds every day. Therefore, biologically active supplements in the form of pumpkin oil or seeds will be an excellent alternative to such a product. They contain many nutrients, including vitamins, minerals, healthy dietary fiber and fats. Pumpkin seeds contain a lot of antioxidants - these are carotenoids and vitamin E. Such substances are able to neutralize free radicals, which negatively affect health, including provoking the development of malignant tumors. Free radicals are essentially highly active atoms that are too actively fixed on cellular tissues.

These are absolutely natural products of cellular metabolism, which, when synthesized in excess, can linger in tissues and cause oxidative stress. Due to such stress, the process of premature aging is triggered and inflammation increases,

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and cells perform their functions less effectively. Free radicals are partially responsible for arthritis exacerbations. Antioxidants are able to remove and neutralize free radicals, which helps to avoid oxidative damage. Such substances also help to reduce the inflammatory process, especially in connective tissues and joints.

Many people around the world suffer from magnesium deficiency. Pumpkin seed extract and oil contain a significant amount of this micronutrient, and the seeds are even one of its main sources. This mineral is necessary for heart health, proper bowel and bladder function, as well as cell regeneration and blood sugar control. In general, it is important for the successful course of more than 600 different chemical reactions in the body. Scientists are sure that magnesium deficiency is dangerous due to the development of depressive states [2,3]. A person needs to receive a sufficient amount of this nutrient every day. You can replenish its deficiency or prevent its occurrence by taking pumpkin oil or extract as part of various supplements. By the way, due to the high level of magnesium, such products can prevent migraines or reduce their severity.

Pumpkin seeds are a source of vitamin K, which is important for many vital functions. This element ensures normal blood clotting, wound healing, and the formation of strong bone tissue. It is also essential for healthy skin, blood vessels, and heart. Pumpkin seed extract contains a lot of fiber — dietary fiber, which is incredibly beneficial for the body. It improves the functioning of the digestive tract, promotes regular bowel movements (prevents constipation), and has a positive effect on the health of the intestines and colon. Scientists have also concluded that a diet rich in fiber helps reduce the risk of heart disease, diabetes, and obesity (4).

This product can play an important role in the prevention and treatment of diseases of the genitourinary system. A 2009 study showed that taking the extract helps reduce the manifestations of benign prostatic hyperplasia (BPH) and improve the quality of life. With this disorder, a non-malignant increase in the size of the prostate occurs, which limits the outflow of urine.

BPH is a common diagnosis among men over 50. This condition is not life-threatening, but it is extremely unpleasant. Pumpkin seeds reduce inflammation

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of the prostate and make urination more comfortable, which is explained by the presence of a significant amount of magnesium and zinc in their composition. Pumpkin seed oil has a similar effect.

Pumpkin seed extract has shown promising results in the treatment of hair loss in men (so-called androgenetic alopecia). It turned out that men who used the oil from this product for 6 months experienced 40% more active hair growth than participants who used a placebo. At the same time, pumpkin seeds are not capable of causing various side effects that are typical for various drugs for alopecia.

Scientists suggest that these properties of seeds are explained by the presence of beta-sitosterol, delta-7-sterol and, presumably, some other useful substances in their composition. These elements are capable of suppressing the synthesis of dihydrotestosterone, a hormone, the excessive production of which correlates with the development of alopecia [2,5, 6].

The use of this product may be beneficial for people with diabetes. The use of supplements helps control insulin levels and blood sugar levels. Animal studies have shown that all parts of the pumpkin (seeds, powder, oil, juice) help reduce blood sugar levels. Experiments on people with type 2 diabetes have shown similar results.

Pumpkin seeds are a rich source of various nutrients and can provide significant health benefits in the prevention and treatment of many diseases. They are used to obtain an extract (dry powder) and oil, which can be used as supplements to the usual diet.

Pumpkin seeds contain many antioxidants that can neutralize free radicals and reduce oxidative stress, suppressing inflammation and slowing down aging. They contain a significant amount of magnesium, which is important for the proper functioning of internal organs and the performance of a number of vital functions, as well as a lot of vitamin K.

Pumpkin seed oil is the richest source of zinc, which ensures prostate health and the synthesis of healthy sperm. This nutrient also helps reduce and alleviate the course of acute respiratory viral infections. Pumpkin seed extract contains a lot of fiber, which supports the functions of the digestive tract.

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Pumpkin seeds help to avoid many unpleasant and deadly diseases. The useful components in their composition reduce the risk of developing cancer of various localizations, help suppress and reduce benign prostatic hyperplasia and improve the functioning of the urinary system. The use of extract and oil helps to cope with overactive bladder, reduce the risk of urolithiasis and eliminate incontinence.

Pumpkin seeds also help suppress the inflammatory process in irritable bowel syndrome, maintain the health of the visual system, get rid of depression and increased anxiety. Scientists have found that such a dietary supplement can be used in the treatment of androgenetic alopecia (male-pattern baldness), and it is also recommended to use it to relieve menopause symptoms and correct metabolic disorders [7,10,11].

Pumpkin seeds prevent the development of diabetes and facilitate the treatment of this disease. They also improve the functions of the cardiovascular system, reduce blood pressure and prevent atherosclerosis. The use of pumpkin seed extract and oil improves the quality of sleep and gets rid of insomnia.

Pumpkin seed-based products can be purchased as dietary supplements. Such products have a carefully balanced composition and saturate the body with a clearly defined amount of nutrients. Such dietary supplements should be used with caution to avoid overdosing and developing unwanted side effects. A doctor or pharmacist consultant can help you choose the optimal dosage. Pumpkin oil is a unique complex of essential phospholipids of plant origin and fat-soluble vitamins A, E, F. It serves as an ideal seasoning for almost any dish.

Pumpkin seed vegetable oil is deservedly popular among specialists. All biologically active substances contained in pumpkin seeds are concentrated in pumpkin oil. Natural pumpkin oil is a multivitamin complex, which includes carotenoids, flavonoids, phospholipids, tocopherols, the most important polyunsaturated fatty acids, the benefits and importance of which doctors constantly talk about. In addition to medicinal properties, this oil has excellent taste qualities, which allows it to be successfully used in cooking.

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Pumpkin oil has a number of healing properties. It is an excellent antioxidant, choleretic and antiulcer agent. In addition, it has hepatoprotective, antiatherosclerotic and antidysuric effects.

Pumpkin oil is characterized by a high concentration of unsaturated fats (more than 80%). Moreover, vitamin F (a complex of polyunsaturated fatty acids) included in pumpkin oil includes the most useful for the human body linoleic and linolenic acids (belonging to the Omega-6 and Omega-3 fatty acid families, respectively). The complex of polyunsaturated acids contained in pumpkin oil has a beneficial effect on the functioning of the cardiovascular, digestive, endocrine and nervous systems, improves the process of fat metabolism, cleanses the body of harmful substances (slags, toxins, carcinogens, etc.), and also helps to strengthen the immune system and maintain normal hormonal balance [8-10].

Pumpkin seed oil differs from most other edible oils in its rather rich mineral composition (more than 50 macro- and microelements), the leading positions in which are occupied by zinc, magnesium, iron and selenium.

Pumpkin oil contains a large number of biologically active substances: carotenoids, tocopherols (at least 30%), phospholipids, vitamins B1, B2, C, P, flavonoids, unsaturated and polyunsaturated fatty acids - linolenic, oleic, linoleic, palmitic, stearic. It has an exquisite taste and subtle aroma.

Materials and Methods

The study used the "Methodological recommendations for assessing the effectiveness of dietary supplements" edited by M.M. Ruzieva, approved by the Ministry of Health on 04.06.2004. The purpose of the study: assessing the effectiveness of the dietary supplements "Pumpkin oil with zinc" and "Pumpkin oil with vitamin E" [1,2].

Results and Discussion

The diuretic effectiveness of the biologically active food supplement was studied on outbred white rats of both sexes weighing 160-250 g.

The experimental animals were kept in standard vivarium conditions with free access to water and food. During the experiment, the animals were divided into 2

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groups of 6 individuals each:
1. group - control (purified water is administered);
2. group - experimental, dietary supplement "Pumpkin oil with zinc" at a dose of 5 ml/kg;

For two hours before the water load, the animals were kept without food and water. Then, the rats were intragastrically administered the dietary supplement "Pumpkin oil with zinc" with a water load in an amount of 3% of body weight using a probe. Then the animals were placed in exchange cages and urine was collected for 3, 6 and 24 hours [1,2]. The obtained data were processed using the program "STATISTICA".

The results of experimental studies have shown that the dietary supplement “Pumpkin oil with zinc” at a dose of 5 ml/kg has a noticeable stimulating effect on diuresis. With a single use of the dietary supplement during the first 3 hours after water loading, it statistically significantly increased diuresis by 5% compared to the control group. In the following 3 hours, the volume of excreted urine differed from the indicators of control animals by only 18%. By the end of the first day of the experiment, the volume of urine excreted in the experimental group did not differ from the values of the control animals (Table 1).

Table 1

Groups	1-3 h, ml	3-6 h, ml	6-24 h, ml
Control	3,2±0,17 100%	3,0±0,1 100%	2,9±0,08 100%
Dietary supplement "Pumpkin oil with zinc"	3,38±0,13* 105%	3,56±0,15* 118%	2,96±0,08* 102%

Note: *- reliability of differences compared to control at P<0.05.

Thus, the conducted studies have shown the effective impact of the biologically active supplement "Pumpkin oil with zinc" on the physiological mechanisms of urine formation in the body.

The results of experimental studies showed that the dietary supplement "Pumpkin oil with vitamin E" at a dose of 5 ml/kg has a noticeable stimulating effect on

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diuresis. With a single use of the dietary supplement during the first 3 hours after water loading, it statistically significantly increased diuresis by 10% compared to the control group. In the following 3 hours, the volume of excreted urine differed from the indicators of the control animals by only 23%. By the end of the first day of the experiment, the volume of excreted urine in the experimental group almost did not differ from the indicators of the control animals (Table 1).

Table 1

Groups	1 -3 h, ml	3-6 h, ml	6-24 h, ml
Control	3,2±0,17 100%	3,0±0,1 100%	2,9±0,08 100%
Dietary supplement "Pumpkin oil with vitamin E"	3,55±O,13* 110%	3,7±0,12* 123%	3,3±0,09* 108%

Note: *- reliability of differences compared to control at P<0.05.

Thus, the conducted studies have shown the effective impact of the biologically active supplement “Pumpkin oil with vitamin E” on the physiological mechanisms of urine formation in the body.

4. Conclusion

1. An experimental study of the biologically active supplement "Pumpkin oil with zinc" showed that the biologically active food supplement has a diuretic effect and has a targeted effect on the physiological mechanisms of urine formation, regulation of electrolyte balance in the body and urine.
2. An experimental study of the biologically active supplement "Pumpkin oil with vitamin" showed that the biologically active food supplement has a diuretic effect and has a targeted effect on the physiological mechanisms of urine formation, regulation of electrolyte balance in the body and urine.

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