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Effect of pomegranate seed oil on the urinary system

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Abstract Pomegranate seed oil, obtained by cold pressing the seeds of the fruit, has long been used in traditional medicine and is noteworthy for its potential health benefits. Regarding its effect on the urinary system, there are several aspects: Diuretic Properties: Pomegranate seed oil has mild diuretic properties, which means it may help increase urine output. This may be helpful for people suffering from swelling or discomfort associated with fluid retention. Anti-inflammatory properties: Components of pomegranate seed oil, such as phytochemicals and antioxidants, may help reduce inflammation in the urinary system. This may be especially useful for various conditions such as cystitis or other inflammatory conditions. Kidney protection: Some research suggests that the antioxidants found in pomegranate seed oil may help protect kidney tissue from damage caused by oxidative stress. This may help maintain kidney health and prevent the development of certain kidney diseases.

Keywords. Pomegranate, antioxidants, medicinal, oil, skin, inflammation, antioxidant, kidney.

Relevance. The urinary system is an important part of the body responsible for filtering blood, producing urine, and removing waste from the body. It includes the kidneys, ureters, bladder and urethra.

Kidneys: These are organs whose main function is to filter the blood to remove excess fluid, waste and toxins. The kidneys also regulate the body's electrolyte levels and produce hormones that control blood pressure and the number of red blood cells. Ureters: These are the tubes that connect the kidneys to the bladder. They transport urine from the kidneys to the bladder. Bladder: The bladder is an organ that temporarily stores urine before it is excreted from the body. It stretches as it fills with urine and has special muscles that control the process of urination. Urethra: The urethra is the passage through which urine exits the bladder and leaves the body. The effects of pomegranate seed oil on the urinary system may be due to its potential diuretic and anti-inflammatory properties. Some studies suggest that pomegranate seed oil may help improve kidney function and reduce the risk of developing certain urinary system diseases, such as kidney stones or bladder inflammation. However, further clinical studies are required to confirm these effects. In addition, pomegranate seed oil is rich in antioxidants, which can help protect cells in the urinary system from damage caused by free radicals. It can also have beneficial effects on the health of the entire urinary system. Overall, consuming pomegranate seed oil may be beneficial for maintaining a healthy urinary system, but it is always recommended to discuss any dietary or supplement changes with a qualified healthcare professional, especially if you have any medical conditions or kidney problems. The formation of kidney stones, also known as nephrolithiasis or kidney stones, is a common disorder of the urinary system. These stones can form in the kidneys or in other parts of the urinary tract, such as the ureters and bladder . Here are some of the factors that contribute to the formation of kidney stones : Irregular drinking: Insufficient water intake can lead to concentration of minerals in the urine, which contributes to the formation of stones. Diet:

Too much consumption of foods rich in protein, salt and sugar, as well as a lack of fruits and vegetables in the diet can increase the risk of kidney stones. Genetic factors: Heredity may play a role in an increased risk of kidney stones. Medical Conditions: Certain medical conditions, such as hyperparathyroidism, cystic fibrosis, kidney disease and several others, can increase the likelihood of developing kidney stones. Lack of physical activity: A sedentary lifestyle can contribute to the formation of kidney stones. Certain medications: Certain medications may increase the risk of kidney stones, including some antibiotics and medications that contain calcium. Kidney stones can cause a variety of symptoms, including lower back pain, pain when urinating, blood in the urine, nausea, and vomiting. Often they can clear from the body on their own, but in some cases medical intervention may be required. Treatment for kidney stones may include diet changes, increasing water intake, drug therapy to relieve symptoms, and removal of stones if necessary through procedures such as lithotripsy or surgical removal.

Methods.

The experiment was carried out in a vivarium on 150 white rats. It involved white rats up to 4 months old. At the beginning of the experiment, all mature rats were quarantined for a week, and after eliminating somatic or infectious diseases, they were transferred to the usual vivarium regime with 3 meals a day. To study the effect of pomegranate oil on experimental groups of animals, experimental animals were divided into 3 groups (n = 150): I – control group (n = 50); Group II - rats with 2 types of renal failure, receiving salt water (n=50); III - group - rats treated with pomegranate seed oil (n=50); This sodium chloride solution was administered to our rats daily for 1 month to induce renal failure. A month later, the rats underwent a biochemical analysis and the levels of creatinine, urea, sodium, calcium and salt were determined. After they were diagnosed with kidney failure, our third phase experiment was conducted in which our rats with kidney failure were given 5 ml of pomegranate seed oil mixed with food for 1 month. Our rats were given clean water during pomegranate oil administration.

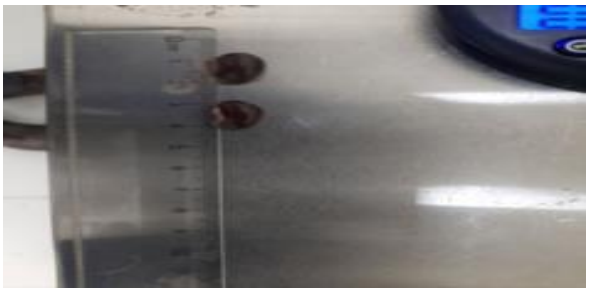
Distribution of animals into groups depending on the content of the experiment.

Groups	The essence of experience	4 month old white rats in an experiment	Total number of animals
I	Control group	50	50
II	Rats received saline (n = 50).	50	50
III	Rats fed pomegranate seed oils (n = 50).	50	50

During the experiment, observations were made of the dynamics of the body weight of rats, their general condition and behavior. There were no deviations in the general condition and behavior of

the animals. Subsequently, the experimental animals were weighed at the appropriate time in the morning, sacrificed by decapitation under ether anesthesia on an empty stomach, and subjected to the experiment. Animals were slaughtered in accordance with international recommendations for medical and biological research using laboratory animals.
Research methods included organometric, histological, histomorphometric, microscopic and statistical methods. After removal, the kidneys were cleaned and their weight was measured with an accuracy of 0.25 mg on a laboratory scale VLR-200 (2019), and the length, width and thickness of the organ were measured with an accuracy of 0.05 mm.

The sections were examined morphometrically using an eyepiece micrometer DN-107T/Model NLSD-307B (Nobel, China) and at the level of the renal medulla, the renal corpuscles, vascular glomeruli and the cavity of the glomerular capsule, as well as the diameter were measured, and the



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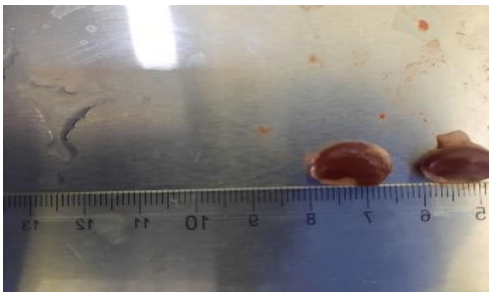

Коррекция с косточек граната гранатовым маслом.

diameter of the lumen of their proximal and distal convolutions was measured tubules.
Results. As a result of a morphometric study of the distal convoluted tubules of the kidneys of 4-month-old white rats in the control group, the diameter of the distal convoluted tubules ranged from 28.21 μm to 31.12 μm, on average - 29.96±0.05 μm, the diameter of the tubular space was 14. ranges from 0.05 μm to 16.23 μm, with an average of 15.05±0.12 μm.

Dynamics of changes in the morphometric parameters of the kidneys of control, experimental and correction with pomegranate seed oil

Duration of the study	State	Capsule thickness			Cortex			Brain matter		
		top pole	gate	lower pole	top pole	gate	lower pole	top pole	gate	lower pole
3 month	Norm	7.93±0.63	10.11±0.55	7.65±0.79	263.49±11.59	312.69±9.22	183.13±3.97	295.75±13.01	352.05±8.30	219.76±5.07
	Salty water	9.02±0.82	12.03±0.85	8.20±0.80	290.28±12.13	332.92±8.50	212.11±6.34	324.17±13.36	370.64±8.77	239.44±4.02

	Correction	6.99±0.68	10.85±0.78	6.99±0.98	260.95±12.62	314.49±9.89	190.05±5.59	290.86±12.89	353.08±9.47	219.47±5.78
6 month	Norm	8.47±0.63	10.93±0.52	7.65±0.79	280.44±10.95	331.83±5.93	213.20±4.08	307.23±10.52	356.43±11.92	231.24±3.85
	Salty water	9.84±0.78	13.39±0.85	9.02±1.15	304.49±16.90	367.91±10.70	252.56±5.95	353.69±9.93	402.35±9.68	280.44±5.01
	Correction	7.96±0.65	11.82±0.69	7.72±0.99	284.11±11.66	338.13±8.00	219.95±5.98	321.25±12.16	365.14±12.08	242.14±5.85

Microscopic studies have shown that the main component of the nephron is the renal corpuscle, surrounded by a two-layer capsule consisting of an outer and an inner layer. The outer layer of the capsule is covered with a single layer of squamous epithelial cells.

Morphologically, the balls have thin connective tissue, the number of capillaries is evenly distributed. At the level of the capsule cavity of the ball. Signs of this phenomenon were mainly evident in the proximal convoluted tubules. In addition, research microscopy, in addition to the concepts described above, is explained by a significant number of widths in the space of nephron tubules.

Morphometric parameters of the kidney nephron in rats of the experimental group

Duration of the study	Glomerular diameter	Capsule thickness (Shumlya-Bowman)	Clearance width		Collective tubules
			First twist	Deut. Izv	
3 month	46.68±1.36	13.88±0.58	13.88±0.74	13.56±0.72	19.24±0.85
6 month	49.49±1.52	18.74±0.83	17.86±0.82	15.52±0.88	20.79±0.91

Normal renal function ensures good elimination of excess salt and water, even with repeated overload. A healthy person can consume 50 times more salt without a significant increase in blood pressure, because... healthy kidneys should be able to cope with such a load. Under normal conditions, with a salt load, the kidneys increase glomerular blood flow and glomerular filtration rate and remove excess salt. The kidneys need one week to establish a new stable “steady-state” salt regime. Loss of renal mass with impaired renal function shifts the “equilibrium point” of blood pressure toward the higher blood pressure that is required to increase GFR and maintain the required level of salt excretion. Observations show that with a loss of renal mass of up to 70%, to eliminate a 3-fold excess of salt, blood pressure increased by 40 mm Hg is required. An increase in salt intake by 10–150 times the normal level caused an increase in average blood pressure from 4–6 to 10–20 mm Hg. It should be taken into account that even modern pharmacological effects on the pretubular factor and, accordingly, GFR are limited and are characteristic only of a certain number of antihypertensive drugs.

The most significant substances in terms of providing trace elements and minor bioactive compounds in pomegranate juice are polyphenolic compounds such as flavonoids, phenolic acids and ellagitannins, as well as minerals such as potassium, magnesium and copper. The daily consumption level is indicated. The average potassium content per serving is 15% of the daily value, copper - 10%, magnesium - 5%.

Discussion. Research about Pomegranate Seed Oil (Punica Seed Oil granatum) may cover various aspects including its potential benefits, limitations, research and potential prospects. Here are some key topics that can be included in such a discussion: Potential health and wellness benefits: Discussion The antioxidant properties of pomegranate oil and its lightness protect cells from free radicals. Consider anti-inflammatory properties and their use in skin care and inflammatory conditions. Cosmetic Uses: Discusses the use of pomegranate oil in cosmetic products such as creams, masks, and hair care products. Memories of the role of the ego and the growth of textural space, hydration and life. Medicinal Uses: Considers the potential medicinal uses of pomegranate oil, including its effects on inflammatory diseases, heart disease, and diabetes. Indication that complete studies are required to confirm efficacy for medical purposes. Composition and Bioactive Substances: Discussion of unique components such as punic acid and phytosterols, the role and beneficial properties of pomegranate. Mention the importance of analyzing the composition of an oil to understand its effects. Limitations and Potential Side Effects: Consider possible allergic conditions or intolerance to pomegranate oil in some people. Indication of the need to test the product before widespread use. Research and Future Directions: Discussion of current research and clinical studies related to pomegranate oil and ix results.

The analysis of the potential prospects for further research and scientific research on this issue is based on the seed pomegranate. Consumer Interest and Market Aspect: Discuss the popularity and demand for products containing pomegranate oil among consumers. Mention of trends in the beauty and health industry related to this oil.

Thus, the practical significance of this study lies in the fact that it reveals the basic principles of the formation and development of morphometric indicators of renal failure, which makes it possible to develop appropriate preventive measures. Pomegranate juice has long been used to treat and prevent many kidney diseases. Consumption of pomegranate oil has a beneficial effect on the condition and function of the kidneys, and is especially recommended for persons with acute renal failure. Pomegranate oil is distinguished by replenishing vitamin deficiencies in the body and providing it with vitamins and elements necessary for the normal functioning of all internal organs, including the kidneys.

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