

**CHEMICAL COMPOSITION OF STONE-FORMING SALTS IN THE URINARY TRACT AND THE IMPORTANCE OF THEIR TREATMENT IN FOLK MEDICINE**

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**ABSTRACT**

*The article provides information on the chemical composition of salts that cause urinary stone diseases. The article also discusses the importance of folk medicine in the elimination of these salts. Mankind has long used plants, animals, and minerals that have medicinal properties in the treatment of diseases. Depending on the components they contain, it is possible to draw conclusions about the composition of urinary stones.*

**KEYWORDS:** *Urinary Stone Diseases, Urate Salts, Oxalate Stones, Phosphate Stones, Folk Medicine.*

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**INTRODUCTION**

It is known that the protection and preservation of human health is one of the important factors in the development and prosperity of society.

During the years of independence, a number of remarkable works have been carried out in our country to improve the health of the population and a healthy lifestyle. In particular, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated 25.12.2019 No 1035 "On further improving the protection of public health", the Council of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan dated 18.01.2021 Resolutions on Measures to Enhance Development "serve as an important legal factor in the development of the industry.

To date, there are still unresolved issues to improve the health of the population, and the role of modern medicine, as well as representatives of folk medicine in solving these problems is invaluable.

It is no secret that in many countries of the world in modern medicine in the treatment of diseases today are often used synthetic drugs. Synthetic drugs not only give effective results in the treatment of diseases, but also have their own unpleasant side effects. Also, in many cases, long-term use of synthetic drugs can lead to other diseases.

Mankind has long used plants, animals, and minerals that have medicinal properties in the treatment of diseases. It has been proven over the years that these elements, which are of natural origin, do not adversely affect the human body. Accordingly, the integration of modern medicine and folk medicine in the treatment of diseases is a topical issue [1].

Among many diseases in the world, urinary stone disease is one of the most common diseases. This disease is one of the most common diseases in our country, caused by the climate of the region, the quality of soil and drinking water, the environment and some socio-economic characteristics of the population.

There are 2 types of causes of stone formation in the urinary system, these are formal and causal types. The formation of salt in the formal type is explained by physicochemical perspectives and conditions. It is based on the fact that the causal type depends on the etiological factors that cause this process [2].

The size of stones formed in urinary stone diseases is classified according to their location, composition, etiology, risk of recurrence and radiological characteristics.

Depending on the location of urinary stones, the disease differs depending on the presence in the kidneys (nephrolithiasis), urinary tract (ureterolithiasis) and bladder (cystolithiasis).

Urinary stones are classified as follows:

Urate stones are smooth, brown in color and are formed on the basis of uric acid salts.

-oxalate stones- non-smooth and in some cases needle-shaped, formed on the basis of salts of oxalic acid.

- Phosphate stones - soft and delicate structural gray

-Cystine stones- are relatively hard, the surface of the stones is smooth and has no needles.

-Mixed stones- the core of these stones is formed of various salts.

Changes in the composition and physicochemical properties of urine lead to the formation of urinary stones [3].

Urine concretions are a mixture of many organic and inorganic compounds. Depending on the components they contain, it is possible to draw conclusions about the composition of urinary stones. The chemical composition of urinary concretions also depends directly on the sex of the patient. While the concentration of oxalate salts in the urine concretions of male patients is high, the concentration of phosphate salts is observed in female patients. Oxalate stones are also found in 39.5% of men and 6.9% of female patients [4].

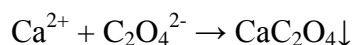
The main components of stones in the urinary system are mainly calcium and phosphorus salts. In classifying urinary stones, their origin and sources are taken into account.

№	Mineral name	Formula
1	Calcium oxalate	$\text{CaC}_2\text{O}_4$
2	Whewellite	$\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$
3	Weddellite	$\text{CaC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$
4	Calcium phosphate	$\text{Ca}_3(\text{PO})_4$
5	Hydroxyapatite	$\text{Ca}_5(\text{PO})_3(\text{OH})_2$
6	Brushite	$\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$
7	Uric acid	$\text{C}_5\text{H}_4\text{N}_4\text{O}_3$
8	Uric acid dihydrate	$\text{C}_5\text{H}_4\text{O}_3\text{N}_4 \cdot 2\text{H}_2\text{O}$
9	Sodium urate	$\text{NaC}_5\text{H}_4\text{O}_3\text{N}_4$
10	Struvite	$\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$
11	Carbonate Apatite	$\text{Ca}_5(\text{PO}_4)_3\text{OH}$
12	Ammonium urate	$\text{NH}_4\text{C}_5\text{H}_4\text{O}_3\text{N}_4$
13	Cystine stones	$[-\text{S}-\text{CH}_2-\text{CH}(\text{NH}_2)-\text{COOH}]_2$
14	Xanthine stones	$\text{C}_5\text{H}_4\text{O}_2\text{N}_4$

Synthetic drugs are also actively involved in the formation of urinary stones. Amoxicillin, ampicillin, ceftriaxone, trimethoprim ephedrine, fluoroquinolones and sulfanilamide drugs are actively involved in the formation of crystals and stone formation in the urinary tract.

Calcium oxalate stones are common among urinary stones, accounting for 57% of urinary stone diseases. These rocks are composed of crystals of whewellite and weddellite minerals [5].

Oxalate stones are formed due to calcium cations and oxalic acid anions:



The urinary environment and the concentration of magnesium and citrate ions in it play an important role in the formation of calcium oxalate salts. In addition, an increase in the concentration of uric acid and sodium monourate in the urine accelerates the growth of calcium oxalate crystals.

In the formation of urinary stones in the body urinary incontinence, renal tubular acidosis, chronic diarrhea, urinary tract infections, changes in the urinary environment, hyperparathyroidism, hypercalciuria, hyperuricosuria, hypocyturia, hyperuricemia and hyperuricemia.

Today, synthetic and natural drugs are widely used in modern medicine, along with surgery, in the treatment of urinary stones.

Thiazide diuretics (hypothiazide, indapamide, hydrochlorothiazide), biophosphonate group drugs, calcitonin preservatives, citrates, pyridoxine (vitamin B<sub>6</sub>), allopurinol, Cystone, Fitolisin, Kanefron etc. drugs are used.

The side effects and side effects of synthetic drugs are leading to an increase in consumption today of products rich in natural biologically active compounds. At present, in the treatment of urinary stones in folk medicine, a wide range of natural food additives, such as "Astosh", "Ayritosh", "Golden Valley", "Healing Pressure" and "Mountain Flower", prepared on the recommendations of Doctor of Chemistry, Professor I.R Askarov. used.

With this in mind, one of the most pressing issues is the creation and implementation of new types of natural food supplements based on local medicinal plants that are cheap, high quality and, most importantly, harmless to the body.

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