



## EVALUATION OF THERAPEUTIC EFFECT OF PHYTOPREPARATIONS IN TREATMENT AND METAPHYLAXIS OF PATIENTS WITH NEPHROLITHIASIS

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**ABSTRACT:** The work studied the chemical composition of kidney stones and revealed that their composition consists of oxalate, phosphate, urate, silicate salts. It is recommended to carry out therapeutic and metaphylactic measures using phyto-collection "Ruyan + Cumin + Honey" in a mass ratio = 1: 4: 20 (ruyan and caraway are crushed in a coffee grinder and mixed with honey until a homogeneous mass is obtained), with a dosage of 1 teaspoon 3 times per a day before meals for 15-30 days, depending on the composition and size of the kidney stone. As a diuretic, it is recommended to take codonopsis (brew 5 g of codonopsis in 1 liter of thermos, use 200 ml 5 times a day). The therapeutic efficacy of phytopreparations in the treatment and metaphylactic measures in patients with nephrolithiasis was assessed, which, respectively, amounted to 95% and 100%.

**KEYWORDS:** Kidney stones, nephrolithiasis, defractometry, composition, treatment, metaphylaxis, efficacy.

### INTRODUCTION

Urolithiasis (Urolithiasis) is one of the most common diseases among the middle-aged and elderly population, the prevalence of which in the world is 3.5-9.6% [1-4]. Depending on the place of residence, there are significant differences in this indicator in different countries. The prevalence of ICD in the European continent ranges from 5 to 10%, in the USA 7-15%, in Canada -12%, in the Arab countries reaches 20%, and in the countries of the Eastern Hemisphere - about 1-5% [2-4].

There is a persistent trend towards an increase in the incidence rate in the United States from 58.7 (1950-1954) to 85.1 (2000) [2], in Japan - from 43.7 (1965) to 134 (2005). .) [5], in Russia - from 440.5 (2002) to 578.8 (2014) [6]. The share of ICD among all urological diseases in Russia reaches 34.1% [7]. In the UK, over the past 10 years, an increase in the incidence of nephrolithiasis by 63%, and the incidence of ureteroscopic treatment of stones by 127%, has been recorded [8]. It was found that the tendency to an increase in the incidence of KSD is observed regardless of gender, age and race [3]. Along with this, there

is a high recurrence rate of the disease, which is reached 50-75% in the interval of 5-10 years [8]. The same picture is observed in Uzbekistan [9].

One of the characteristic features of the disease is a high frequency of recurrence of stone formation - from 15–25% with urate nephrolithiasis and up to 70% with phosphate rock [10].

Despite the developed methods of treatment, the number of patients is increasing year after year [8,10], since surgical intervention and conservative methods of prevention do not lead to the disappearance of the main causes of stone formation [11].

In this regard, the development of preventive, therapeutic and metaphylactic measures for a patient with nephrolithiasis is an urgent task. A rational solution to this problem from the point of view of safety for the body, availability, and also low cost is the use of herbal remedies.

## PURPOSE OF WORK

Study of the chemical composition of kidney stones, assessment of the therapeutic effect of metaphylaxis using a phytopreparation based on cumin, ruyan and honey.

## MATERIALS AND RESEARCH METHODS

The material for the study was renal stones removed from the renal tissue in 12 patients during surgery and in 20 patients with nephrolithiasis, the stones in which were independently treated with drugs at the age of 18 to 65 years in the medical clinic “Prestij Med Servis”.

The chemical composition of stones removed from the kidneys of patients was studied using X-ray diffractometry on a Panalytical Empyrean device (Germany) equipped with a Cu tube ( $K\alpha_1 = 1.5406 \text{ \AA}$ ) at the Center for High Technologies (Tashkent). In addition, well-known methods were used to determine the content of Ca, Mg, P and uric acid from blood and urine [12, 13]. The presence and size of stones was determined by ultrasound examination. The data obtained were subjected to statistical processing using STATISTICA programs at  $P = 0.95$ .

## RESULTS AND DISCUSSION

As a result of X-ray diffractometry, the results of studying the composition of renal stones removed from patients were obtained. As an example, Fig. 1 shows a diffractogram of a kidney stone of a patient N 2\_B.

As an example, table 1 shows the chemical composition of stones removed from patients with nephrolithiasis.

*Table 1. Chemical composition of kidney stones*

Patient	Structure
N 1_Sh	Urat - $C_5H_4N_4O_3$ , Oxalate – $CaC_2O_4(H_2O)$ , Calcium Magnesium Silicate – $Ca_2Mg(Si_2O_7)$ .
N 2_B	Urat - $C_5H_4N_4O_3$ , Oxalate – $CaC_2O_4(H_2O)$ , Calcium hydrogen phosphate – $Ca(HPO_4)(H_2O)_2$ , Calcium Silicate – $Ca_3(SiO_4)O$
N 3_Kp	Oxalate – $CaC_2O_4(H_2O)$ , Urat - $C_5H_4N_4O_3$ , Calcium Silicate – $Ca_3(SiO_4)O$ , Hydroxyapatite – $Ca_4.86(H_0.222(PO_4)_3)(OH)0.942$

From the data in Table 1, it can be seen that the composition of kidney stones consists of oxalate, phosphate, urate, silicate salts. Silicate salts are typical for certain categories of people, the formation of which, apparently, depends on the place of residence of the patient.

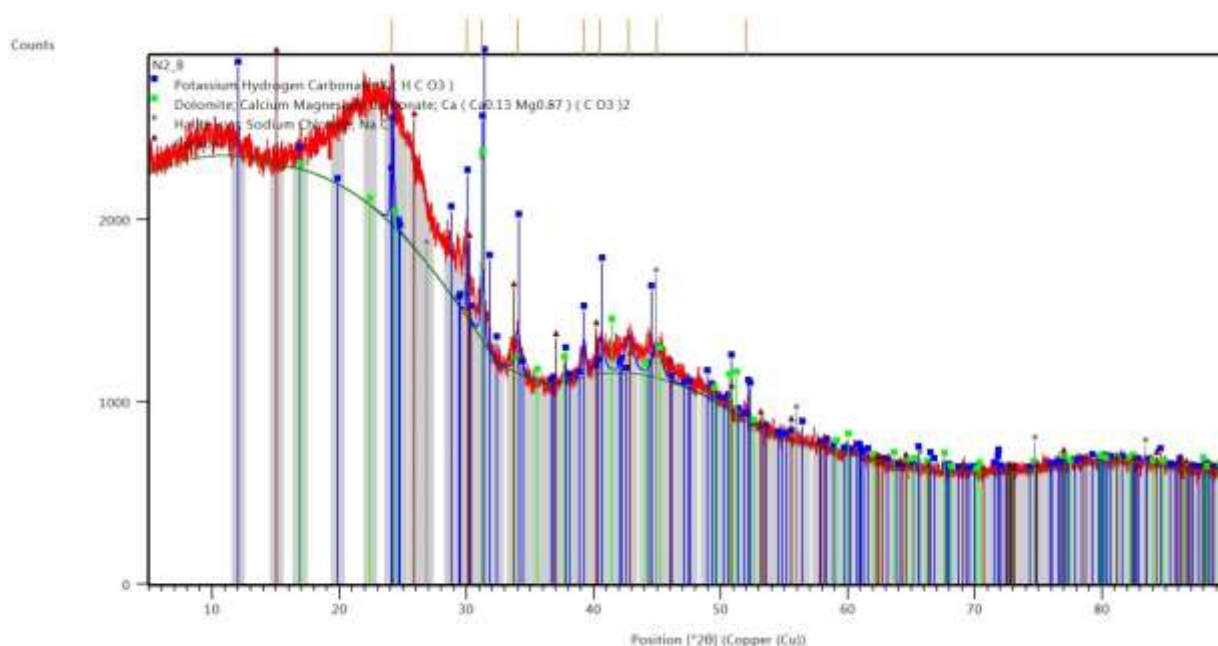


Fig. 1. Diffraction pattern of a kidney stone of patient N2\_B

Based on the content of Ca, Mg, phosphate, and uric acid ions in urine and blood, one can preliminarily estimate the expected composition of stones and the probability of precipitation in the kidney in patients with nephrolithiasis.

To assess relapse, the criteria given in [14] were used, according to which the fulfillment of the following conditions prevents the formation of phosphate salts:

No stone is formed		The stone is formed	
$[Ca^{2+}]^3 \cdot [PO_4^{3-}]^2 > [Ca^{2+}]^3 \cdot [PO_4^{3-}]^2$		$[Ca^{2+}]^3 \cdot [PO_4^{3-}]^2 < [Ca^{2+}]^3 \cdot [PO_4^{3-}]^2$	
control	sick	control	sick

The criterion for the formation of urate stones is the concentration of uric acid in the blood. If  $C_{UA} < 0,350$  mmol/l, no precipitate is formed, and if  $C_{UA} > 0,350$  mmol/l, uric acid precipitate is formed. If we take into account the above results, then in order to prevent the formation of relapses in the formation of phosphate and urate stones, it becomes necessary to develop metaphylactic measures involving the dissolution of kidney stones, as well as a decrease in the content of Ca ions and uric acid in the blood, i.e. normalization of metabolic processes in the body of patients.

Proceeding from the above, for the treatment and metaphylaxis of patients, the phyto-collection "Ruyan + Cumin + Honey" was used in a mass ratio of 1: 4: 20 (ruyan and cumin are ground in a coffee grinder and mixed with honey until a homogeneous mass is obtained), with a dosage of 1 teaspoon 3 times a day before meals for 15-30 days, depending on the composition and size of the kidney stone. Codonopsis was used as a diuretic (5 g of codonopsis was brewed in 1 liter of thermos, 200 ml was used 5 times a day).

The effect of the treatment was monitored by determining the size and number of stones using ultrasound and determining the content of Ca, Mg, P and uric acid in the blood and urine. Changes in the above parameters before and after metaphylaxis are shown in Table 1.

*Table 1. Dynamics of biochemical parameters of blood serum during treatment*

Parameter	Unit of measurement	On admission	After treatment	P
Calcium	mmol/l	2,65±0,12	2,16±0,11	>0,001
Uric acid	mkmol/l	382,56±6,02	276,35±4,82	>0,001
Creatinine	mmol/l	121,16±3,83	108,38±3,64	>0,01
Phosphate	mmol/l	1,28±0,12	1,24±0,10	>0,1
Potassium	mmol/l	4,26±0,24	4,08±0,19	>0,1
Sodium	mmol/l	121,11±5,12	108,32±4,16	>0,1

As the results show, the size of the stones decreased sharply starting from the 10th day of metaphylaxis; in some patients, after 15 days of treatment, the stones completely disappeared, which was confirmed by an ultrasound study of the urinary system. The normalization of biochemical parameters in the blood was also observed. The same picture was observed during metaphylactic measures in patients after surgical removal of kidney stones. The effectiveness of treatment was 95% and metaphylaxis - 100%.

Thus, therapeutic and metaphylactic measures in patients with nephrolithiasis lead to the dissolution of kidney stones, normalization of the content of Mg, Ca, P and uric acid in the blood.

## CONCLUSIONS

1. It is recommended to carry out therapeutic and metaphylactic measures using phyto-collection "Ruyan + Cumin + Honey" in a mass ratio = 1: 4: 20 (ruyan and caraway are crushed in a coffee grinder and mixed with honey until a homogeneous mass is obtained), with a dosage of 1 teaspoon 3 times per a day before meals for 15-30 days, depending on the composition and size of the kidney stone. As a diuretic, it is recommended to take codonopsis (brew 5 g of codonopsis in 1 liter of thermos, use 200 ml 5 times a day).
2. The therapeutic efficacy of phytopreparations in the treatment and metaphylactic measures in patients with nephrolithiasis was assessed, which, respectively, amounted to 95% and 100%.

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