



# EVALUATION OF THE EFFECTIVENESS OF THE USE OF CUMIN OIL IN RICKETS IN CHILDREN

**Ibatova Sh.M., Ruzikulov N.E.**

*Samarkand State Medical University, Uzbekistan, Samarkand*

## ANNOTATION

The serum content of higher fatty acids was studied in 45 children with rickets. It has been found that in children with rickets, unsaturated fatty acids decrease and saturated fatty acids increase. The composition of higher fatty acids in the blood serum of children with rickets receiving traditional treatment and with the use of cumin oil was studied. The inclusion of cumin oil in the therapy complex improves the fatty acid composition in children with rickets. Cumin oil improves the digestibility of lipids by almost 2 times by regulating the activity of serum lipase, increases the activity of serum lipase and thereby improves lipid metabolism.

**KEYWORDS:** rickets, higher fatty acids, patients, lipase activity, cumin oil.

## INTRODUCTION

Rickets is a medical and social problem, as it has serious consequences that cause a high incidence of children at an older age [1,2,4,7,12,15] Despite significant medical advances in recent years, the problem of the incidence of vitamin D-deficient rickets in children remains relevant to this day [9,11,13]. In vitamin D-deficient rickets, due to a lack of vitamin D, the processes of disruption of all types of metabolism, including lipid metabolism, occur [5,6,8,10,14]. Rickets suffered at an early age can have an adverse effect on the growth and development of a child in the future, which determines the important practical significance of research aimed at in-depth study of rickets and the development of more advanced methods of complex therapy.

## THE PURPOSE OF THE STUDY

To study the regulating effect of cumin oil on serum lipase activity in children with rickets.

## MATERIALS AND RESEARCH METHODS

The studies were conducted in 45 patients with rickets and 10 practically healthy children (control group). In the examined patients, the composition of fatty acids and lipase activity (LA) of blood serum were determined by gas-liquid chromatography [3]. The qualitative and quantitative composition of fatty acids was determined on a chromatograph color 100, model 165 with a flame ionization detector. To identify the separated methyl esters of fatty acids, the dependence of the retention index on the boiling point of the substance was used along with the witness method. As a result of identification, the following fatty acids were found in blood serum: C (16:0) – palmitic, C (16:1) – palmitoleic, C (18:0) – stearic, C (18:1) – oleic, C (18:2) – linolenic, C (18:3) – linolenic acid and C (20:4) – arachidonic acid.

The results of the study and their discussion. We analyzed the content of fatty acids in the blood serum of children with rickets compared with the data of healthy children. The results are presented in table 1.

**Table 1**

**Composition and content of serum fatty acids in children with rickets**

Fatty Acids	Control	Upon Admission	P<
C (16:0)	28,17±1,37	30,87±1,53	0,02
C (16:1)	2,70±0,22	1,38±0,64	0,05
C (18:0)	26,13±1,32	28,03±1,04	0,02
C (18:1)	0,90±0,13	0,66±0,6	0,02
C (18:2)	33,32±2,51	29,73±2,34	0,05
C (18:3)	2,41±0,45	2,58±0,50	0,02
C (20:4)	3,56±0,60	2,68±0,60	0,02

P - is the reliability of the difference between the indicators in the group of patients and healthy people.

As can be seen from the above data, the content of fatty acids such as C (16:0), C (18:0) and C (18:3) increase significantly, and C (16:1), C (18:1), C (18:2) and C (20:4) – decrease, i.e. violations of the studied parameters of lipid metabolism are observed.



A study of the composition of higher fatty acids in blood serum in children with rickets receiving traditional treatment and when used as a substance correcting impaired lipid metabolism, cumin oil was conducted.

The I-group of children (19 patients) with rickets received the traditional method of therapy, and the II-group of examined children with rickets (26 patients) received cumin oil (modified method) against the background of the traditional method of treatment. The results of the study are presented in Table 2.

**Table 2**  
**The composition and content of fatty acids (in %) in blood serum, depending on the method of treatment**

Fatty acids	Control	Traditional		Modified	
		$M \pm m$	$P <$	$M \pm m$	$P <$
C (16:0)	28,17±1,37	28,96±1,28	0,01	28,21±1,31	0,1
C (16:1)	2,70±0,22	1,62±0,43	0,01	2,55±0,30	0,1
C (18:0)	26,13±1,32	27,67±0,82	0,20	26,75±0,80	0,1
C (18:1)	0,90±0,13	0,76±0,10	0,20	0,92±0,10	0,1
C (18:2)	33,32±2,51	30,74±2,10	0,50	33,12±1,80	0,1
C (18:3)	2,41±0,45	2,11±0,45	0,05	2,73±0,45	0,1
C (20:4)	3,56±0,60	2,10±0,51	0,05	3,26±0,40	0,1

Note: P is relatively healthy.

The examined children with rickets who received traditional treatment had a wide range of fluctuations in the studied parameters of lipid metabolism.

When using cumin oil, the fatty acid composition indicators returned to normal in most children with rickets, which is confirmed by the data obtained: With (16:0) - 28,21±1,31%, ( $P < 0.05$ ), With (16:1) - 2,55±0,30%, C (18:0) - 26,75±0,80%, With (18:1) - 0,92±0,10%, With (18:2) - 33,12±1,80%; With (18:3) - 2,73±0,45%; With (20:4) - 3,26±0,40%.

The positive dynamics of the indicators of the fatty acid composition of blood serum is obviously explained by the therapeutic effect of cumin oil. In addition, comprehensive clinical and biochemical studies have been conducted on the use of vegetable oils and assessment of their digestibility.

The digestibility of oils by the body was assessed by the lipase activity of blood serum (LA).

Studies have shown that the serum concentration in the children we examined before the use of apricot oil was - 10.2±1.6 mmol/ (l\*min), when using cottonseed oil in the diet it was - 10.5±1.1 mmol/ (l\*min), (n=9), i.e. no noticeable change was observed, when giving ziger oil it was - 16.8 ±1.2 mmol/ (l\*min), (n=9), sea buckthorn - 18.9±1.7 mmol/ (l\*min), (n=10), and when children received cumin oil, the lipase activity of blood serum increased significantly - 19.7± 1.9 mmol/ (l\*min), (n=8).

Based on the data obtained, it can be assumed that the use of cumin oil leads to an improvement in the digestibility of lipids by almost 2 times by regulating the activity of serum lipase and thereby improves lipid metabolism.

## CONCLUSIONS

The use of cumin oil to correct the spectrum of higher fatty acids leads to normalization of serum lipase activity, restoration of metabolism of higher fatty acids and ensures the effectiveness of therapy in children with rickets. The use of cumin oil improves the digestibility of lipids by 2 times by increasing the activity of serum lipase and thereby improves lipid metabolism.

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