

ESTABLISHING THE OPTIMAL TIME FOR SAMPLING SALIVA TO DETERMINE BIO-ELEMENT HOMEOSTASIS OF THE ORAL CAVITY OF EARLY CHILDHOOD

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Relevance

Dental caries remains the most common chronic disease among the child population. World statistics show that a significant share in the structure of this pathology is occupied by caries of primary teeth in children under the age of six.

Early childhood caries has a multifactorial nature, the environment of which has a special place in the disturbance of the macro- and microelement composition of the oral fluid, leading to demineralization of tooth enamel, and saliva is the main source of calcium, phosphorus, sodium, potassium and fluorine entering the tooth enamel, which are the main structural elements tooth enamel.

Based on the above, the saliva of young children can be used as a diagnostic object to assess the formation of a pre-caries condition in the oral cavity and, accordingly, for the correction of dysselementosis in order to prevent the formation of caries.

The purpose of the research is to develop recommendations for the correction of cariogenic bioelement homeostasis of the oral cavity of children suffering from caries of various degrees of severity based on the study of macro- and microelement compositions of saliva

This report presents the results of studies to establish the optimal time for collecting saliva samples to assess the bioelement homeostasis of the oral cavity of examined children.

Materials and methods. Examinations of bioelement homeostasis of the oral cavity were carried out with the participation of young children living in the city of Tashkent with the prior consent of their parents (or authorized persons).

Saliva sampling for research was carried out in the morning (from 7:00 to 9:00); in the middle of the day (from 12:00 to 14:00); in the evening (from 19:00 to 21:00) before and after feeding the children.

Sampling of mixed saliva was carried out by random collection of oral fluid in a volume of 3–5 ml for 10 minutes into a special tube with a hermetically sealed stopper. The content of bioelements calcium, phosphorus, sodium, potassium and fluorine was determined in the samples using atomic adsorption spectrophotometry.

Results and discussions. The most concentrated content of the studied bioelements was established in the samples obtained before breakfast. At the same time, the content of the

calcium bioelement was 47.23 ± 2.38 ; phosphorus - 138.25 ± 4.22 ; sodium - 247.12 ± 14.82 ; potassium - 382.63 ± 23.0 and fluorine - 0.98 ± 0.01 $\mu\text{g/ml}$.

While in the samples obtained from the same examined patients in the morning after breakfast, the quantitative calcium content was 32.41 ± 2.14 ; phosphorus - 104.17 ± 4.31 ; sodium - 210.76 ± 7.62 ; potassium - 331.16 ± 19.31 and fluorine 0.82 ± 0.01 $\mu\text{g/ml}$.

The decrease in the content of the studied bioelements in the saliva samples of the examined children taken after breakfast compared to the samples obtained before breakfast is for calcium - 31.37%; phosphorus - 24.65%; sodium - 14.71%; potassium - 13.45%; and fluorine 16.33%. A similar picture can be observed in such time periods of the day as in the middle of the day and in the evening using the example of all the studied bioelements of the oral fluid.

Apparently, the decrease in the concentration of macro- and microelements in the test saliva samples occurs due to the dilution of saliva and a decrease in the density of the test samples.

It should be noted that the content of the studied bioelements in the samples obtained in the morning before breakfast represents the highest concentration, and subsequently until the end of the day their content gradually decreases. For example, in saliva samples taken in the morning, mid-day and evening before feeding children, the calcium content was 47.23 ± 2.38 ; 42.14 ± 1.92 and 37.33 ± 2.61 $\mu\text{g/ml}$, respectively, phosphorus 138.25 ± 4.22 ; 124.26 ± 3.66 and 115.78 ± 5.24 $\mu\text{g/ml}$, respectively.

This pattern in the content of bioelements in saliva can also be observed in the example of sodium, potassium and fluorine.

Conclusion:

1. As a result of studies of the quantitative content of bioelements calcium, phosphorus, sodium, potassium and fluorine in the composition of saliva samples of examined children, selected at different periods of the day, fluctuations in their concentration were established, both depending on the time of day and on the state before or after feeding the child .
2. The highest concentration of the studied calcium bioelements is 47.23 ± 2.38 ; phosphorus – 138.25 ± 4.22 ; sodium – 247.12 ± 14.82 ; potassium - 382.63 ± 23.0 and fluoride 0.98 ± 0.01 $\mu\text{g/ml}$ in oral fluid was noted in saliva samples obtained in the morning before breakfast.
3. Based on the results of the experiments, in further studies to ensure sufficient sensitivity, accuracy and detectability of the content of bioelements, it is recommended to take a saliva sample in the morning (from 7:00 to 9:00) before feeding children.