

## Use of Modern Fluorine-Preserving Drugs for Prevention of Early-Stage Caries at Different Levels of Oral Hygiene in Adolescents

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**Annotation:** It is known that dynamic de- and remineralization processes take place on the surface of the tooth, in which the concentration of  $\text{Ca}^{2+}$ ,  $\text{PO}_4^{3-}$ ,  $\text{OH}^-$  ions in oral fluid and tooth enamel, as well as saliva and interdental pH value, space plays a crucial role. Extraction of minerals - demineralization, with their simultaneous intake - remineralization helps maintain the consistency of the enamel composition.

**Key words:** caries, remtherapy, fissure sealing.

It was found that the permeability of different layers of intact enamel is not the same. The lowest permeability is the surface layer, then the underground and the middle. As the demineralization processes increase, the permeability of enamel increases, including for organic acids. The effect of organic acids leads to an increase in enamel microcavities, which in turn leads to the development of permeability and further increase in the solubility of enamel. In addition, the dynamic balance of de- and remineralization processes is facilitated by the variability of the mineral composition of enamel due to the ion exchange ability of crystals.

Enamel is the most mineralized tissue in the body. It covers the anatomical crown of the tooth, protects the pulp and dentin from negative environmental factors. The thickness of the enamel layer is not the same in different parts of the tooth: the maximum thickness reaches 2.3-3.5 mm, on the lateral surfaces of the chewing bumps of permanent teeth, it is 1-1.3 mm. The thinnest layer of enamel (0.01 mm) is located in the neck of the tooth. The thickness of enamel of temporary teeth does not exceed 1 mm.

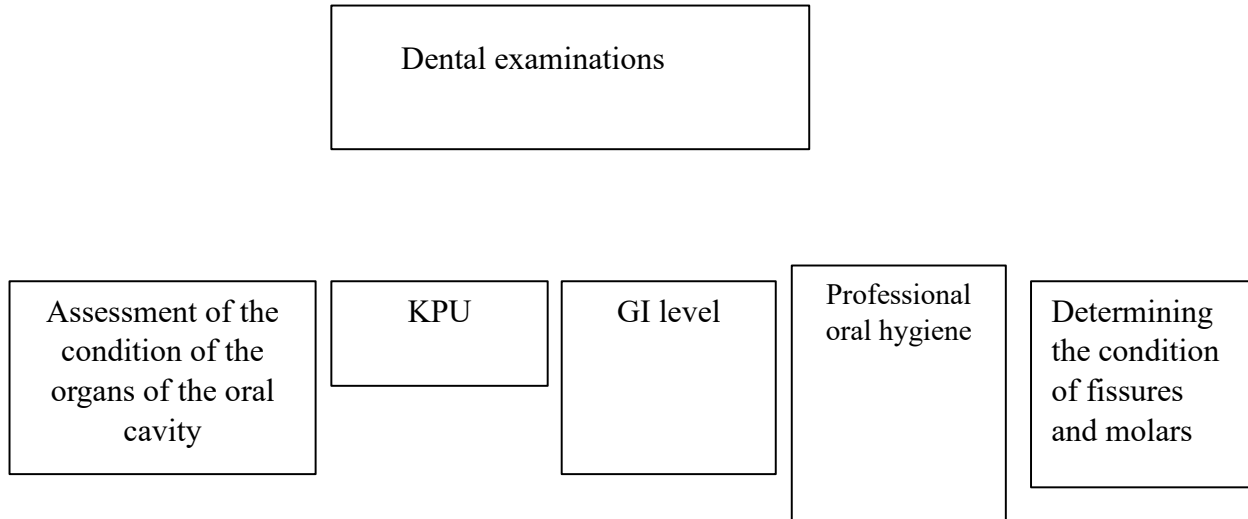
When the chemical composition of enamel of intact teeth is studied (electron microscope according to the results) the following elements are identified: C - 15.76%; N 2.87%; O - 24.07%; F - 0.26%; Na - 0.61%; P - 18.01%; Cl - 0.55%; Ca - 37.87%.

Enamel consists of 95% mineral compounds, mainly hydroxyapatite crystals, 1.2% - organic compounds and 3.8% water. Water forms a hydration shell in free form and in the form associated with crystals (3–3.3%). Some researchers say that fluoride ions, which are a strong part of enamel, cannot significantly affect the stability of the tooth during the development of caries. The main positive effect is carried out by fluoride ions located in the oral fluid surrounding the tooth tissue. This optimal level of fluoride ions can significantly reduce enamel solubility and enamel permeability by enhancing the remineralization process on the tooth surface. Lambrou D., Larsen MJ, Fejerskov O., Tachos B. (1981) Continuous maintenance of a slightly elevated concentration of fluoride in the oral cavity helps to reduce solubility and stimulates the remineralization process. With a one-time increase in fluoride concentration, the changes in enamel are very small, but if they persist for a long time, it protects against the release of calcium and phosphorus from the surface layer of enamel, and also contributes to the formation of enamel. entry of fluoride ions into the enamel structure and the formation of fluorapatite. This effect was achieved with daily use of fluoride pastes and detergents. In addition, there is evidence in the literature that the use of fluorine-containing preparations contributes to the formation of a protective coating layer of mineral components on the surface of enamel in the early stages of caries, as well as in the pores of loose enamel. If the rate of dissolution of apatite exceeds the rate of formation of the protective layer, this protective reaction is disrupted. Preparations containing fluoride increase the rate of formation of the protective mineral layer.

**The purpose of the research:** to improve the prevention and treatment of early forms of dental caries in adolescents .

**Materials and methods:** 51 11-16-year-old schoolchildren who applied to the Stomatology Center at the Bukhara State Medical Institute participated in the study. .

Research design



Age	Ratio	
	Absolutely	%
11 - 12 young	12	23.5
13 -1 4 young	22	43.1
1 5 -1 6 young	17	33.3
<b>Total</b>	<b>51</b>	<b>100.0</b>

### 1.1 . Age ratio of teenagers

Caries was diagnosed based on history, clinical examination, probing, and percussion. For the diagnosis of focal demineralization of enamel, the initial form of caries, staining of stains with a 2% methylene blue water mixture according to the LAAXamit method was used as an additional method. With the term "focal demineralization of enamel" we mean caries in the initial stage of caries - the white spot stage. This included single and multiple spots on the visible surface of tooth enamel.

In terms of color, white homogenous spots, which are usually well-defined, and spots of different shapes, in which the chalky parts are combined with healthy enamel, were distinguished. The sizes of the spots ranged from the size of a dot to the size occupying 1/3 of the tooth surface. According to the classification of the surface, spots with a smooth bright surface and spots with an uneven chalky, dull surface were distinguished. In a number of cases, a decrease in enamel density was detected in the furnace demineralization section, and it was determined that enamel is easily broken by an excavator. All stains related to focal enamel demineralization were stained with methylene blue 2% in water. A 2% water mixture of methylene blue was used to stain the teeth after brushing and flossing. Then the teeth were washed with a cotton swab moistened with hydrogen peroxide, which cleans the gums well, and the surface of the tooth was dried with a gauze napkin or a stream of hot air. The teeth were protected from saliva using cotton swabs. The paint mixture was applied to the studied surfaces of the teeth with a pipette for 2-3 minutes. Then it was cleaned with a tampon and rinsed with water.

The examination was carried out using a set of dental equipment. Staining was detected using 2% methylene blue. Caries teeth and fillings, number of extracted teeth, tooth formula were determined. The diagnosis of dental caries was made based on anamnesis, visual examination, probing and

percussion. Additional testing methods were also used: determination of thermometric, GI and RMA indices.

**Results and its discussion.** 51 patients aged 11 to 16 years of both sexes participated in the study, 78 teeth with enamel caries were treated and dynamically monitored. 32 of all patients (58.33%) are boys and 19 are girls (41.67%).

In order to study the effectiveness of drugs for the treatment of caries, the teeth of patients were divided into 3 groups.

Group 1 had 31 (31.25%) teeth with various forms of enamel caries, and their treatment was carried out by the infiltration method using the "ROCS" material.

20 (34.38%) teeth of group 2 patients were treated by remineralization using "Remodent".

According to the patient's level of oral hygiene, each group was divided into 2 subgroups. 1 subgroup - hygiene level is satisfactory, 2 subgroup - unsatisfactory

**Table 1.2 - Distribution of teeth by study groups and subgroups**

All teeth 78 (100%)	1 group 45 teeth (31.25%)	1 small group 18 teeth (14.06%)
		2 small groups 22 teeth (17.19%)
	2 groups 23 teeth (34.38%)	1 small group 14 teeth (10.94%)
		2 small groups 30 teeth (23.44%)

### Summary.

In the course of treatment, control and dynamic observation were carried out in the following periods: before treatment, 3, 6 and 12 months after treatment. After 3 months of treatment, patients treated with caries infiltration method complained of aesthetic defect, which in turn was 5 and 3 times less frequent than the groups using deep fluoridation and remineralization for treatment. None of the groups complained of pain. When examining infiltrated carious spots, 100% of their surfaces were smooth. In other groups, almost no changes were observed after 3 months.

When the size of the stained area of carious spots was measured 3 months after treatment, the mean value in the deep fluoridation group (group 2) was  $3.98 \pm 0.73$  mm, and in the remineralization group (group 3) -  $4.09 \pm 0.83$  mm. There was no noticeable reduction in the size of spots in them. But in 40 (100%) cases in the group using the "ROCS" material, spots were not stained.

Thus, by the end of the observation period, the results of all research methods in each of the groups differed significantly from the results obtained earlier.

It should be noted that the dynamics of changes in the results of additional research methods were different in each group. After infiltration of the foci of enamel caries (group 1), a rapid and constant decrease in the indicators of all methods was observed within the normal limits. In 95% of cases, these changes remained stable during follow-up examinations.

When using the deep fluoridation method (group 2), the peak of decrease in indicators (by about 30%) coincided with the 3rd month of observation. Later, the values of additional methods gradually decreased.

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