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STUDYING THE EFFECTS OF THE ACIDITY OF BEVERAGES ON THE HARD TISSUES OF TEETH

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ABOUT ARTICLE

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Abstract: In the Republic of Uzbekistan, an online survey was conducted among various age groups in order to determine the most frequently consumed drinks (240 respondents). The pH values of 26 drinks were measured using litmus tests and a pH meter. The drinks were determined based on these pH values and distributed into groups of liquids according to their erosion potential. Five drinks - pineapple juice, lemon juice, red wine, white wine and green tea - were used in the enamel resistance test (ERT). The most aggressive liquid for the hard tissues of the teeth was determined. The results of the experiment showed that the drink that has the most aggressive effect on the hard tissues of the tooth is lemon juice, which reduces the resistance of enamel to caries by 3.33 times within three days. Keywords: acidity of beverages, hard tooth tissues, caries resistance Erosion of hard tooth tissues is a gradual loss of enamel and dentin as a result of acid dissolution. The prevalence of dental erosion is high and is steadily increasing among the population [3]. A recent study conducted in Israel [4] showed that the prevalence of erosion is 36.6% in the 15-18 age group and 61.9% in the 55-60 age group. One of the main factors contributing to the occurrence of erosions is the frequent consumption of low-pH beverages; consumption of low-pH soft drinks continues to grow, and knowledge of their erosive potential is important

for dietary and dental counseling. The drinks consumed contain various acids, including carbonic acid, organic acids from fruits, tartaric acid, citric acid, malic acid and tartaric acid [1-3]. In recent years, diets using low-pH foods and beverages (such as lemon and vinegar diets) have become increasingly popular, but not everyone is aware of their harmful effects. More and more people use sweet carbonated or non-carbonated drinks instead of plain water to quench their thirst, which also (but not exclusively) negatively affects the condition of the hard tissues of the teeth.

INTRODUCTION

To study the effect of drinks with a low pH level on the hard tissues of teeth. Questionnaires on beverage preferences were offered to different age groups, the pH of the studied beverages was measured using a pH meter and test strips to determine the erosiveness of beverages and the resistance of enamel using TER before and after exposure to beverages.

METHODS

A questionnaire survey on the most frequently consumed drinks was conducted among residents of the Republic of Uzbekistan of different age groups (240 respondents). According to the results of the survey, 26 drinks were selected, the pH of which was measured during the experiment using litmus tests and a pH meter. The device has a measuring range of 0-14 pH units, a divider of 0.1 and an absolute error of ± 0.1 pH units. The pH meter was calibrated and the pH of drinks was measured by lowering the pH meter electrode into a clean beaker for 30 seconds. When the pH meter readings stopped changing, the pH value of each drink was recorded. . In addition, TER was performed for several drinks (1 M HCl solution, 10-point scale, dye). RESULTS AND DISCUSSION According to the results of the survey, the most frequently consumed liquid was water (36%), followed by tea (34%) and coffee (23%). The most popular juice was orange juice (28%); the liquids with the lowest pH were balsamic vinegar (1.5), lemon juice (2.0), Coca-Cola (2.5) and white wine (3.5). These liquids turned out to be the most aggressive. Coffee, tea and coffee with milk have a pH above 5.5. Despite the fact that the erosivity of beverages depends on the complex interaction of many factors, including the type of acid, acid concentration, temperature, time spent in the mouth of the drink and the buffering capacity of saliva, it is currently considered that pH is an indicator of the erosivity of food and beverages. pH values were used to identify drinks and groups of liquids according to their erosiveness. Five drinks (pineapple juice,

lemon juice, red wine, white wine and green tea) were tested for enamel resistance (TER) TER was performed at the beginning of the experiment, after 3 and 7 days of exposure to these solutions, TER was measured according to the method proposed by V.R. Okushko. TER was measured according to the method of V.R. Okushko. Hydrochloric acid with a diameter of 1.5-2 mm was dripped onto the plaque-free and air-dried vestibular surface of the tooth using a pipette, after 5 seconds the drop was removed with a dry cotton swab and a 1% solution of methylene blue was dripped onto the damaged enamel and adjacent intact enamel. After removing the dye with a dry cotton swab, the stained areas of the enamel were evaluated on a standard 10-point scale: 1-3 points (light staining) - high caries resistance; 4-5 points - moderate; 6-7 points - low; 8 or more points - very low caries resistance of the enamel.The results of the experiment showed that lemon juice had the greatest effect on the hard tissues of the tooth among drinks, reducing enamel caries resistance by 3.33 times in three days. Wine reduced caries resistance by 2.33 times (Fig. 4). Tea, on the contrary, did not affect structural changes in the hard tissues of the teeth. According to a study by the Australian University [5], tasters and sommeliers are at high risk of developing caries. The study showed that only ten one-minute tastings can cause the initial stages of enamel erosion, which emphasizes the need for preventive measures.

CONCLUSION

Prolonged exposure to hard tooth tissues of liquids with low acidity (pH 5.5) is fraught with the development of erosion.

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