



THE IMPORTANCE OF PROPHYLAXIS PASTE IN PREVENTING DENTAL CARIES

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Abstract: *In experimental and clinical conditions the influence of medioprophyllactic toothpastes with different fluoride compounds on enamel structural and functional characteristic of permanent teeth on the stage of secondary mineralization was studied. In the experimental part qualitative and quantitative chemical test of the superficial enamel layer in 80 samples was made. Using secondary ion massspectrometry method the quality of fluoride and calcium ions enamel penetration was tested. Using radiophotoelectronic spectroscopy the number of fluoride, calcium and phosphorus ions was evaluated. The insufficient level of permanent teeth enamel mineralization after eruption and its changes due to the influence of different fluoride compound was shown. 88 schoolchildren of 12 years old were examined. The influence of fluoride containing toothpastes on hard tooth tissues, structural-functional enamel caries resistance and saliva mineralisation ability was studied. The correlation between studied parameters and fluoride compound, its concentration and the term of usage was found.*

Key words: *fluoride, toothpastes, aninofluoride, sodium fluoride, sodium monofluorophosphate.*

Introduction

Prevention of permanent caries teeth in children is one of the urgent problems pediatric dentistry, due to the high the level of prevalence and intensity of this diseases [1-4]. The lowest level of cari resistance of permanent teeth is observed in the first year after their eruption. Raise level of prevention during this period, in particular for through the use of the most effective means personal hygiene, will help to reduce decrease in the level of morbidity. One of the main properties of fluorine is ability to catalyze mineralization processes enamel [3, 5, 6]. However, efficacy data influence on these processes of various compounds fluorine in their exogenous application is often are contradictory [7-9]. This may be related with the fact that the anti-caries efficacy of dental pastes are in most cases evaluated on the basis of clinical data [7, 9, 10]. The aim of this study was to increase less effective prevention of dental caries in children by clinical and laboratory substantiation choice of anti-caries treatment and prophylactic toothpastes for personal hygiene mouth during the period of secondary mineralization of constant teeth.

Methods

In the experimental part of the work 80 samples of permanent enamel were studied teeth. Enamel samples were obtained from permanent teeth. That were removed for orthodontic reasons indications (premolars and canines of children aged 12-13 age not later than 1 month after eruption). Immediately after extraction, the permanent teeth were placed into the "artificial saliva" solution, which was prepared according to the method of T. Fusayama (1975). All enamel samples were divided into 3 main and 1 control groups. They were housed in four separate hermetic boxes (20 samples per box), which which were



filled with artificial saliva. In the the following enamel samples of each main group treated twice a day with an interval of 12 hours.

A professional oral care provision includes the removal of plaque, calculus and staining. The finishing procedure may be an important factor on the long-term oral hygiene performance and may be enhanced with the utilisation of oral hygiene products such as prophylactic pastes. Dental prophylaxis typically consists of placing pumice or an abrasive paste in a rubber cup and applying the paste to the clinical crowns of the teeth using rotating rubber cup at slow speed. This aims at the complete removal of plaque, salivary pellicle, materia alba and extrinsic stains found on the crowns of teeth to reduce and prevent future dental caries. Administrating prophylaxis paste directly, however, is not within a dental nurse's scope of practice. Nonetheless, this article outlines the clinical aspects of prophylaxis paste, the different types available on the market, and the dental nurse's role within the provision of prophylaxis paste and patient education.

A dental prophylaxis, or more commonly known as prophy, is used for the complete removal of calculus, soft deposits, plaque and staining to all supragingival and unattached subgingival tooth surfaces. At present, the only dental professionals that have this task within their scope of practice are dentists and hygienists. A prophylaxis is indicated for patients with healthy gingiva as a preventative measure and is commonly preformed after a routine hygiene (scale and polish) appointment (Robinson and Bird, 2012). Additionally, a clinician may elect to perform a prophylaxis before taking an impression, or before in-house tooth whitening to ensure that an optimum result is achieved.

A good prophylaxis paste should have good cleaning properties while polishing. However, the prophylaxis used should cause minimal abrasion and surface roughness of the enamel (Yurdagüven et al, 2012). There are many types of prophylaxis pastes available on the market. They are mainly differentiated by their abrasive qualities and any additions of fluoride. The pastes come in different flavours (Figure 1) and you can purchase large pots or individual cups. The purchase decision comes down to the dental professional's personal preference.

The contents of prophylaxis pastes are similar to dentifrices (toothpastes). Commercially available prophylaxis pastes typically contain a mixture of binders, humectant (to retain moisture and stabilise the preparation), colouring agents, preservatives, fluoride, flavourings and a range of abrasive grades (from course to fine). The abrasives contained in prophylaxis pastes are of various particle sizes and are categorised as fine-grade (1–45 μm), medium-grade (74–105 μm), or course-grade (74–177 μm) (Yurdagüven et al, 2012). The abrasive material is usually composed of pumice or chalk (calcium carbonate) (Bonser and Pearson, 2013).

The use of prophylaxis paste has been proven clinically to smooth the enamel surface after hygiene cleaning. This helps to remove calculus, soft deposits, plaque and staining to all supragingival and unattached subgingival tooth surfaces. As discussed, it can also be used to enhance impression and the application of tooth whitening within surgery. With the introduction of direct access, the dental nurse's role within the practice has developed and they are now paramount to patient compliance and treatment plan acceptance. To be able to do this confidently, and with professional integrity, it is essential that a nurse uses



his/her continuing professional development plan to highlight areas of professional knowledge that need to be developed.

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