

Remineralizing materials in dentistry

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Introduction

Tooth remineralization is a naturally occurring process in the oral cavity. It is defined as a process in which calcium and phosphate ions are sourced to promote ion deposition into crystal voids in demineralised enamel. Materials that promote remineralization of enamel surface are often used in dental practice

Aim

To investigate the available literature data on the current state of the problem the remineralizing therapy in dentistry.

Material and methods

In the study all available sources of literature have been analyzed. Such issues were examined as fluoride, calcium phosphate based, hydroxyapatite, calcium sucrose phosphate materials application in dentistry, as well as sugar substitute using in the patients.

Results

The most effective method of caries prevention is through the use of topical fluoride, such as toothpaste, varnish and mouthwashes. Depending on the patient and the scenario exogenous fluoridisation may be used prophylactically or therapeutically. For low concentrations of fluoride (under 100 ppm) is used to treat early caries lesions and consists mainly of fluoroapatite and may be used at home. For high concentrations of fluoride (over 100 ppm), it consists primarily of calcium fluoride which acts as a depot for fluoroapatite and is applied prophylactically twice yearly. Other additives are also added to these products to decrease net phosphate loss and to increase absorption of the fluoride, for example the use of stannous fluoride and acidulated phosphate fluoride. For reversible lesion, superficial and deeper enamel lesions (up to D2) fluoride application topically aids the remineralisation of the inorganic matrix and can have a anticariogenic effect. As well as therapeutically, the use of fluoride gels prophylactically exponentially decrease the risk of early carious lesions. Research shows that the strongest and most resilient fluoride compound is fluorohydroxyapatite, followed by fluoroapatite and finally hydroxyapatite. Therefore, the aim of the treatment is to replace the less resilient hydroxyapatite crystals with the caries resistant fluoroapatite crystals by the addition of fluoride, calcium and phosphate ions. Although, thorough patient anamnesis is required to calculate the amount of fluoride patient is already taking through diet and other ways to decrease the risk of fluorosis!

Conclusions

The modern products of fluoride containing medicaments are proven to aid in the arresting and remineralisation of early caries lesions, as well as having a prophylactic effect on the dentition and increasing caries resistancy.