

Comparison of Fluoride Uptake into Dental Enamel from two Types of Sodium Fluoride Varnishes (In vitro)

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Abstract

Background and Aim: Different fluoride products such as gels, mouthwashes, toothpastes and varnishes have been used to increase tooth resistance against dental caries. Among these, fluoride varnishes gained more importance due to their advantages. The present in-vitro study aimed to measure the amount of fluoride uptake into enamel from Sultan and AriaDent varnishes.

Materials and Methods: In this experimental in-vitro trial, 40 fresh premolars were selected and sectioned into two mesial and distal halves. The samples were divided into 2 groups (n=20) and were exposed to either AriaDent or Sultan varnish products for one hour. Samples were stored in artificial saliva at 37° C for 24 hours and then were etched with 1 M acid perchloric for 30 seconds. After etching the window surfaces were washed by 0.2 M Potassium hydroxide (KOH). Sampling was done using acid etch enamel biopsy technique and fluoride and calcium contents were measured by potentiometer and spectrophotometer devices. Data were analyzed using T-Test.

Result: Enamel fluoride uptake in the specimens exposed to AriaDent and Sultan varnishes were 3.27 ± 1.89 ppm and 3.41 ± 1.34 ppm, respectively. The calcium content of the enamel specimens exposed to varnish was 82.02 ± 52.84 ppm for samples exposed to AriaDent and 71.11 ± 52.68 ppm for those treated with Sultan. No significant difference was found between two varnishes regarding the fluoride uptake into enamel ($p=0.36$) or calcium content. ($p=0.34$)

Conclusion: It seems that local fluoride therapy with both varnishes (AriaDent and Sultan as the standard varnish) is equally effective.

Keywords: Dental Enamel, Sodium Fluoride, Varnish, Uptake