GEORGIAN MEDICAL NEWS
No 12 (357) 2024

EFFECTS OF *SESAMUM INDICUM* (SESAME) OIL IN REMINERALIZING OF WHITE SPOT LESIONS INDUCED AFTER BRACKET DEBONDING: AN IN VITRO STUDY

Abstract.

Background: Potential damage to dental enamel associated with orthodontic treatment especially enamel demineralization or white spot lesions formation are encountered as a common and undesirable complication of fixed orthodontic treatment.
Aims of Study: Estimation the remineralization potential of paste prepared from *Sesamum indicum* oil in different concentrations and compare with casein phosphopeptideamorphous calcium fluoride phosphate (CPP-ACFP) paste on artificial enamel caries produced in bracket debonded tooth surface.
Materials and Methods: Fifty-five sound permanent premolars were collected for this study. After mounting, bracket bonding and bracket debonding, the teeth were randomly divided into five groups. Artificial enamel caries was created by immersion of the samples in the demineralization solution. The enamel surface treated as following: Group A (n=11): Baseline (no demineralization and no treatment). Group B (n=11): Control negative (artificial saliva only), Group C (n=11): CPP-ACFP paste, Group D (n=11): 5% *Sesamum indicum* oil (paste1). Group E (n=11): 10% *Sesamum indicum* oil (paste2). Eight samples from each group were subjected to a surface microhardness test (SMH) and three samples from each group were subjected to scanning electron microscope (SEM) with energy dispersive X-ray spectroscopy (EDX) after 30 days of treatment. One-way analysis of variance (ANOVA), and Kruskal-wills tests were used to determine the significant differences between the groups. The statistical outcomes were considered significant at $p < 0.05$.
Results: (ANOVA) results of SMH revealed a statistically significant difference in surface micro hardness after treatment among the study groups and the greatest mean value of surface microhardness was seen in 5 % *Sesamum indicum* oil (paste1) after the baseline group. Kruskal-wills test outcomes of EDX showed no significant difference after treatment among the treatment groups. SEM observations showed occlusion the craters of enamel rods and wellsealed interprismatic cavities of enamel after treatment.
Conclusion: The *Sesamum indicum* oil used in this study exhibited potential remineralization in subsurface enamel lesions when compared with CPP-ACFP.