Association of toothpaste during home-bleaching: effects in relation to the enamel morphology and staining susceptibility.

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Resumo

The use of toothpaste with remineralizing agents has been indicated during the home bleaching. This study evaluated the action of two toothpastes, with fluoride and chitosan, during the bleaching in relation to the enamel roughness and the efficacy in prevent surface staining of bleached enamel. The use of chitosan-based toothpaste was efficient in preventing roughness alterations during the bleaching. None of toothpastes used interfered in the bleaching efficacy, and, for the group treated with chitosan, it was observed, as a result, a bleached enamel more resistant to the staining with coffee solution.

Keywords: bleaching, roughness, staining.

Introduction

The bleaching agents could change the mineral content of enamel.\(^1\) The use of remineralizing agents, as in toothpaste, is indicated to prevent the damages of bleaching in the tooth structure.

Results and Discussion

Sixty enamel bovine blocks were divided in two groups: Carbamide peroxide 16\% (CP) and Hydrogen Peroxide 6\% (HP). Each group were subdivided in according to the toothpaste used during the home-bleaching (n=10): A) Distilled water (control); B) Conventional toothpaste - CT (1450 ppm F); e C) Toothpaste with Chitosan - Chi. The home bleaching was performed for 14 days and, 3 hour after the treatment, the samples were exposed to the assigned toothpaste (20s). After the completion of the bleaching, the samples were stained with coffee solution. The roughness (Ra) and color evaluations were performed before (T0) and after (T1) bleaching; and after staining (T2). Statistics was applied with analysis of variance 1-way (ANOVA) and Tukey test (\(\alpha<0.05\)).

The exposure to Chitosan toothpaste was efficient in preventing Ra alteration, once in T1xT0 and T2xT0, these groups showed the lower Ra values, with statistical differences in relation to the other groups. In the color analysis (\(\Delta E, \Delta L, \Delta a, \Delta b\)), for T1xT0, it was not observed statistical difference between the groups, showing that the toothpastes did not influence the bleaching effect. In T2xT1, the treatment with Chi toothpaste resulted in the lower values of \(\Delta E\) for CP and HP, with significant differences in relation to the conventional toothpaste. Also, for HP, it was found the lower \(\Delta E\) for the group with Chi, with difference in relation to the control (distilled water). This means that, the groups treated with Chi presented the lower color modification. For \(\Delta L\), after staining, it was observed differences in relation to the groups brushed with Chi and control. For the bleaching with HP, the Chi was efficient in reducing the staining, once this group presented the lower variation of \(\Delta L\). For the \(\Delta a\) \(\Delta b\) values, the groups with Chi presented the lower values with significant differences between CP and HP. The positive effects of chitosan could be explained due to its strong potential to adhere the enamel surface at the same time that it can be ionically linked with another saliva compounds, like ions fluoride.\(^2\) So, in this issue, it is possible that chitosan could reduce the roughness alteration of enamel due to bleaching treatment at the same time that it can prevent the staining of the bleached enamel.

Conclusions

The results suggest that the exposure of the bleached enamel to the chitosan-based toothpaste is efficient in preventing the roughness changing of the enamel during the home-bleaching treatment. As consequence, the chitosan can also reduce the susceptibility of the bleached enamel to staining.

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