

Antimicrobial effect against streptococcus mutans of an adhesive system with copper and zinc oxide nanoparticles

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Abstract

Objective: Determine the antimicrobial properties of the incorporation of copper and zinc oxide nanoparticles into a total rinse and etch adhesive against *Streptococcus mutans* in patients with composite resin restorations made with loaded adhesive.

Methods: A randomized clinical study was conducted of 25 patients of both sexes from the orthodontics graduate course taught at the Dental School of the University of Chile, in whom the presence of *Streptococcus mutans* was confirmed in saliva. Occlusal composite resin restorations were performed in upper premolars with exodontia indicated as part of the orthodontic treatment, using loaded adhesive (composition 5 / 0.2% ZnO and Cu, respectively) and control (without nanoparticles in its composition), according to the randomization list. Microbiological samples were taken at three moments applying the tray technique (before, 1 week after and 4 weeks after the restorations). *Streptococcus mutans* were obtained, isolated and identified from the samples taken. Data analysis was based on the Mann-Whitney test. **Results:** Mean *Streptococcus mutans* CFU count in the experimental group was higher after the composite resin restorations were made. Results of PCR molecular identification show the presence of *Streptococcus mutans* in 20 of 25 samples. **Conclusions:** No differences were found in the *Streptococcus mutans* count before and after application of the adhesive over the composite resin restorations.

Author keywords

Adhesive dental coating
Copper
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Zinc oxide