

# Streptococcus mutans count on restorations made with adhesive with and without loading zinc and copper oxide nanoparticles

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## Abstract

**Objective:** To determine the antimicrobial properties of the incorporation of zinc and copper oxide nanoparticles in an etching and total wash adhesive on *Streptococcus mutans* in patients with composite resin restorations made with loaded adhesive.  
**Methods:** Experimental and randomized trial, the sample were 25 patients, of both sexes, belonging to the FOUC Orthodontic postgraduate program, in whom the presence of *Streptococcus mutans* in saliva was confirmed. Occlusal composite resin restorations were made in upper premolars with indication of extraction by orthodontic treatment, with loaded adhesive (whose composition is 5 / 0.2% ZnO and Cu respectively) and control (without the presence of nanoparticles in their composition), according to the scrambling listing. Microbiological samples were taken in three stages with the cuvette technique (before, 1 week and 4 weeks after the restoration was made). Colonies of *Streptococcus mutans* were obtained, isolated and identified from the samples obtained. The statistical analysis used the SPSS v.21 software, the data was analyzed by Mann Whitney test  
**Results:** The average CFU count of *Streptococcus mutans* in the experimental group (adhesive modified with zinc oxide and copper nanoparticles) was higher after the fabrication of composite resin restorations. The results of molecular identification by PCR demonstrate the presence of *Streptococcus mutans* in 20 of 25 samples.  
**Conclusions:** There are no differences in the count of *Streptococcus mutans* before and after the application of the adhesive on the composite resin restorations.

## Author keywords

Bacterial load  
Colony count, microbial  
Dental bonding  
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*Streptococcus mutans*