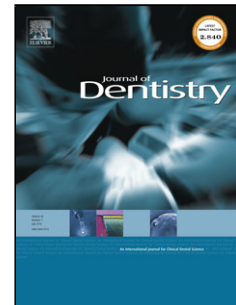


Accepted Manuscript

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PII: S0300-5712(17)30091-X
DOI: <http://dx.doi.org/doi:10.1016/j.jdent.2017.04.007>
Reference: JJOD 2759

To appear in: *Journal of Dentistry*

Received date: 30-10-2016
Revised date: 14-4-2017
Accepted date: 18-4-2017

Please cite this article as: Gutiérrez Mario F, Malaquias Pamela, Hass Viviane, Matos Thalita P, Lourenço Lucas, Reis Alessandra, Loguercio Alessandro D, Farago Paulo Vitor. The role of copper nanoparticles in an etch-and-rinse adhesive on antimicrobial activity, mechanical properties and the durability of resin-dentine interfaces. *Journal of Dentistry* <http://dx.doi.org/10.1016/j.jdent.2017.04.007>

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The role of copper nanoparticles in an etch-and-rinse adhesive on antimicrobial activity, mechanical properties and the durability of resin-dentine interfaces.

Short title: Effects of an etch-and-rinse adhesive containing copper nanoparticles on the durability of resin-dentine interfaces.

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Abstract

Objectives. To evaluate the effect of addition of copper nanoparticles at different concentrations into an etch-and-rinse adhesive (ER) on antimicrobial activity, Knoop microhardness (KHN), *in vitro* and *in situ* degree of conversion (DC), as well as the immediate (IM) and 2-year (2Y) resin-dentine bond strength (μ TBS) and nanoleakage (NL).

Methods. Seven experimental ER adhesives were formulated according to the amount of copper nanoparticles incorporated into the adhesives (0 [control], 0.0075 to 1 wt.%). We tested the antimicrobial activity of adhesives against *Streptococcus mutans* using agar diffusion assay after IM and 2Y. The Knoop microhardness and *in vitro* DC were tested after IM and 2Y. The adhesives were applied to flat occlusal dentine surfaces after acid etching. After resin build-ups,

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