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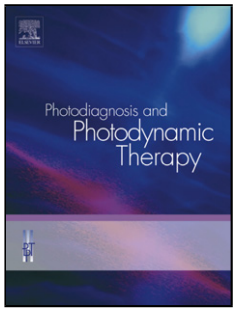

Title: Curcumin-mediated Antimicrobial Photodynamic Therapy reduces the viability and vitality of infected dentin caries microcosms

Authors: Daniela Alejandra Cusicanqui Méndez, Eliézer Gutierres, Evandro José Dionisio, Marília Afonso Rabelo Buzalaf, Rodrigo Cardoso Oliveira, Maria Aparecida Andrade Moreira Machado, Thiago Cruvinel

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Curcumin-mediated Antimicrobial Photodynamic Therapy reduces the viability and vitality of infected dentin caries microcosms

Daniela Alejandra Cusicanqui Méndez[a], Eliézer Gutierres[a], Evandro José Dionisio[a], Marília Afonso Rabelo Buzalaf[b], Rodrigo Cardoso Oliveira[b], Maria Aparecida Andrade Moreira Machado[a], Thiago Cruvinel[a]

[a]Department of Pediatric Dentistry, Orthodontics and Public Health, Bauru School of Dentistry, University of São Paulo

[b]Department of Biological Sciences, Bauru School of Dentistry, University of São Paulo

Corresponding Author:

Thiago Cruvinel

Department of Pediatric Dentistry, Orthodontics and Public Health, Bauru School of Dentistry, University of São Paulo

Alameda Dr. Octavio Pinheiro Brisolla, 9-75, Vila Universitária, 17012-901, Bauru-SP, Brazil

Phone: +55 14 3235 8318 Fax: +55 14 3223 4679

Email: thiagocruvinel@fob.usp.br

Highlights

- Curcumin-mediated aPDT reduced the viability and vitality of dentin microcosms
- This therapy showed a trend of dose-dependency on the viability of microcosms
- However, it did not influence lactic acid production by dentin microcosms

ABSTRACT

Background: To our knowledge, there is a lack of evidence on the effect of Antimicrobial Photodynamic Therapy (aPDT) by the application of curcumin against complex biofilms of dental caries lesions. In this sense, this study aimed to evaluate the viability, vitality, and acid metabolism of infected dentin caries microcosms treated with curcumin-mediated aPDT. **Methods:** After microcosm biofilms growing anaerobically on bovine dentin disks immersed in McBain medium with 1% sucrose at 37°C for 5 days, the biofilms were treated by the association of DMSO water solution or 600 $\mu mol.L^{-1}$ curcumin with 0, 37.5 or 75 $J.cm^{-2}$ blue LED (455 nm). Then, the colony-forming units (CFU) counts of total microorganisms, total streptococci, mutans streptococci, and total lactobacilli were determined by plating. The lactic acid concentration was analyzed by enzymatic spectrophotometry method, while the vitality of intact biofilms was evaluated by confocal laser scanning microscope (CLSM). Statistical analysis was performed by Kruskal Wallis and post-hoc Dunn's tests ($P<0.05$). **Results:** Curcumin alone did not affect the viability of microorganisms and the vitality of intact biofilms. However, 75