

TITLE: EVALUATION OF ANTIMICROBIAL POTENTIAL OF DITERPENIC ACIDS OBTAINED FROM COPAÍBA OIL FOR THE TREATMENT AND PREVENTION OF CARIES.

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ABSTRACT

Dental carie is a multifactorial disease related to genetic differences, lifestyle and socioeconomic conditions. Caries occurs by the formation of dental plaque that occurs by the excess of acidogenic microorganisms located in hard and soft tissues structured in biofilm. The initial bacteria for plaque formation are from the genus *Streptococcus*, such as *Streptococcus mutans*, *Streptococcus mitis* and *Streptococcus salivarius*, being the *Streptococcus mutans* the main etiological agent of caries. The most commonly used antimicrobial agent to combat and prevent this condition is chlorhexidine digluconate, but it has sideeffects that restrict its use. Thus, the search for new antimicrobials for the synthesis of drugs with smaller effects is increasing. The aim of this work was to evaluate the antimicrobial potential of diterpene acids obtained from copaiba oil on human dental plaque bacteria. The method was the identification of the minimum inhibitory concentration of the compounds by microdilution in broth. To perform the tests the substances copalic acid, 3-acetoxy-copalic acid and 3-hydroxy-copalic acid were evaluated with concentrations between 800 μ M and 1.56 μ M. The substances were solubilized by DMSO and diluted with Muller Hinton broth by serial dilution. The control used was chlorhexidine digluconate that was solubilized with water and diluted in the same culture medium. The strains used were *S. mutans* CCT 3440, *S. mitis* NCTC 12261 and *S. salivarius* NCTC 8616 from the Reference Bacteria Collection of the National Institute of Health Quality Control - Oswaldo Cruz Foundation (INCQS-FIOCRUZ). The results obtained showed for all strains, the substance with the best antimicrobial activity was copalic acid (100 μ M). The other substances presented 800 μ M activity against *S. mutans* and *S. salivarius*. For *S. mitis*, 3-acetoxy-copalic acid and 3-hydroxy-copalic acid did not present activity at the highest concentration tested. This shows that the presence of a substituent group at the three (3) position of the copalic acid promotes the loss of antibacterial activity. Thus, the copalic acid stands being promising for the creation of prototypes of antimicrobial drugs for oral use.

Keywords: Antimicrobial, caries, *Streptococcus*, prototype, copalic acid

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