

**TITLE:** ANTIBACTERIAL EFFECT OF A TRITERPENE ISOLATED FROM *Combretum leprosum* LEAVES ON PLANKTONIC CELLS AND BIOFILMS FROM *Streptococcus salivarius* AND *Enterococcus faecalis*

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## **ABSTRACT**

Biofilms are complex microbial communities constituted by populations embedded in complex, self-produced polymeric matrices, adherent to each other, and surfaces or interfaces. Biofilms have been implicated in the etiology of several diseases, including some that affect the oral cavity. Among bacteria involved in biofilm formation on oral surfaces, both *Streptococcus salivarius* and *Enterococcus faecalis* are of great importance in caries and endodontic infections, respectively. Currently, several plants have been considered as sources of useful molecules for prevention and/or eradication of microbial biofilms. Thus, this work aimed to investigate the antibiofilm properties of the triterpene 3 $\beta$ ,6 $\beta$ ,16 $\beta$ -trihidroxilup-20(29)-ene isolated from leaves of *Combretum leprosum*, a shrub commonly found in Caatinga biome, Northeast Brazil. In order to evaluate the antimicrobial potential of such compound, assays aiming the determination of the minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were performed on planktonic cells and biofilms from *S. salivarius* ATCC 7073 and *E. faecalis* ATCC 10100. Briefly, planktonic cells of both species were grown for 24h with different concentrations of the triterpene and then inspected for their growth. In addition, the effect of the triterpene on biofilm formation by both strains was also evaluated through the estimation of biomass content by the crystal violet, which was expressed as percentage, and enumeration of viable biofilm cells by determining the number of colony forming units (CFUs), which was expressed as CFU $\cdot$ ml<sup>-1</sup>. Data from three individual experiments showed that MIC was 7.8 and 31.25  $\mu$ g $\cdot$ mL<sup>-1</sup> for *S. salivarius* and *E. faecalis*, respectively. Moreover, the MBC for *S. salivarius* was 62.25  $\mu$ g $\cdot$ mL<sup>-1</sup>. Regarding antibiofilm activity, the triterpene significantly reduced both biomass formation and viability of all strains, possessing activity even at 1.95  $\mu$ g $\cdot$ mL<sup>-1</sup>. Therefore, the triterpene 3 $\beta$ ,6 $\beta$ ,16 $\beta$ -trihidroxilup-20(29)-ene should be considered as a promising agent against *S. salivarius* and *E. faecalis* biofilms.

**Keywords:** *Combretum leprosum*; biofilm; antibacterial; *Enterococcus faecalis*; *Streptococcus salivarius*

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