

TITLE: ANTIMICROBIAL ACTIVITY OF NATURAL AND SEMI-SYNTHETIC ACIDS OBTAINED FROM COPAÍBA OIL AGAINST *Staphylococcus aureus* AND *Escherichia coli*

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ABSTRACT:

Staphylococcus aureus and *Escherichia coli* are important human pathogens, responsible for diseases with a great concern on public health. *S. aureus* can colonize and infect host tissues, from the skin to tissues of the gastrointestinal tract, heart and bones. It is one of the predominant causes in bacteremia and infective endocarditis. *E. coli*, although, in normal situations, it may be harmless in the gastrointestinal tract, when in imbalance is the main etiological agent of diarrheal and extraintestinal diseases. In order to reduce the harm caused by the continuous use of antibiotics and bacterial resistance, medicinal plants are being studied more rigorously in the search for an effective antimicrobial in the control and prevention of infections. Due to the promising curative properties of copaiba oil, studies on its antimicrobial potential have been conducted. The objective of this study was to evaluate the antimicrobial activity of natural and semi-synthetic acids obtained from copaiba oil. In order to carry out the tests, 3-acetoxy-copalic, 3-hydroxy-copalic acid and copalic acid were used, which were solubilized by DMSO and diluted with Muller Hinton broth by serial dilution, being the concentration of the substances ranged from 800 μ M to 1.56 μ M. The control drug used was ampicillin. The minimal inhibitory concentration of the substances was determined by the microdilution assay in broth medium, followed by addition of resazurin to demonstrate bacterial cell viability. The MIC found for both 3-acetoxy-copalic and 3-hydroxy-copalic on *S. aureus* was 800 μ M and 100 μ M for copalic acid, whereas for ampicillin it was <1.56 μ M. For *E. coli* bacteria, the values found for the three substances were > 800 μ M and 3,125 μ M for ampicillin. The results are consistent with those expected, since the literature reiterates the sensitivity of Gram-positive bacteria to copaiba oil and Gram-negative resistance. In conclusion, the results of the present study suggest that copalic acid may be a potential antimicrobial source for the treatment of diseases caused by *S. aureus*.

Keywords: antimicrobial, *Copaifera*, *S. aureus*, *E. coli*

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