

TITLE: ANTIMICROBIAL ACTIVITY OF RED PROPOLIS AGAINST ISOLATED GRAM-POSITIVE BACTERIA OF INTENSIVE THERAPY UNIT

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ABSTRACT:

There have been cases of multidrug-resistant bacterial infections in the world. Micro-organisms classified as Gram-positive cocci, especially *Staphylococcus* spp., stand out as one of the main groups of bacteria that cause these outbreaks, with Intensive Care Units being one of the most susceptible sites for contamination. One of the possibilities of inhibiting the growth of these bacteria is through the use of natural products that have antimicrobial activity and offer low toxicity. Propolis is a complex mixture made by bees, made up of resinous and balsamic material, known for its biological properties. A new type of propolis from the mangrove region of the state of Alagoas, called "red propolis", was found and classified as the 13th type of Brazilian propolis, which has been distinguished by its unique compounds. The objective of this study was to evaluate the antimicrobial activity of the red propolis against gram-positive bacteria isolated from the Intensive Care Unit. In order to obtain the hydroalcoholic extract (EHA), the crushed *in natura* propolis was subjected to cold extraction (maceration) and, through the liquid-liquid extraction technique, the EHA was fractionated, obtaining the fractions of medium polarity (FMP) and medium-high polarity (FMAP). The evaluation of the antimicrobial activity was carried out using the broth microdilution method proposed by the Clinical and Laboratory Standards Institute (CLSI) for determination of Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC). The extracts and fractions were evaluated against Gram-positive bacteria isolated and identified in a previous study: Methicillin-sensitive *Staphylococcus aureus* (MSSA) and methicillin resistant (MRSA), *S. epidermidis* and *S. saprophyticus*. Analyzing the results, EHA and fractions, tested in isolation, presented Minimum Inhibitory Concentration (MIC) against all strains studied, ranging from 50 µg/mL to 6250 µg/mL. FMP showed better performance, demonstrating the lower inhibitory concentrations. For CBM, there was variation between 200 µg/mL and 25000 µg/mL. The lowest concentration was obtained by FMP against a strain of MRSA. The findings of this study demonstrated that red propolis presented excellent antimicrobial activity against clinical isolates of Gram-positive cocci, including MRSA strains. In addition, it was observed that FMP stood out as a promising biotechnological product.

Keywords: red propolis, Gram-positive, MRSA, intensive care unit