

TITLE: INVESTIGATION OF THE ANTIMICROBIAL ACTIVITY OF GEOPROPOLIS EXTRACTS

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ABSTRACT:

Researching new antimicrobial agents is imperative of the growing resistance of bacteria to antibiotics. Several products of stingless bees (SLB) are being investigated for this purpose, among them the geopropolis, a mixture of vegetable resins, wax, soil and bees salivary secretion. It is produced by bees to seal the hives, having a complex chemical composition, where the presence of phenolic compounds is highlighted, differing according to the geographic region in which the product was collected, presenting different biological activities. On this study, the effects of *Melipona pernigra* geopropolis have been tested. The material was collected from the apiary at Universidade Federal de Mato Grosso (campi Sinop), IDEA / MT no. 51001054752. This product was used for the preparation of crude ethanolic extract of geopropolis in different concentrations 5, 10 and 15%. Part of this extract was submitted to liquid-liquid fractionation in hexane and ethyl acetate, the latter being the one used, because it has a higher concentration of total phenolics. This solvent underwent rotaevolution at 40°C and the dried extract was solubilized in 5% ethanol PA and used in the antimicrobial assays. In this way, the antibacterial activity against the standard strain of *Staphylococcus aureus* (ATCC 25923) and an *Escherichia coli* isolate, obtained from chickens marketed in the municipality of Sinop, MT, were evaluated. Antimicrobial activity assessment had been conducted by agar diffusion method in which microorganisms have been inoculated in a 0.3 Mac Farland turbidity and after, spread over Petri dishes (fivefold each concentration of ethanolic extracts) in Mueller Hinton agar, using a Drigalki handle. Next, 6 mm diameter perforations were performed in the agar, placing 30 mL of the preparations in each hole with a pipette. Due to the geopropolis extract action, inhibition halos were present and measured after 24h incubation. In all concentrations and repetitions tested, geopropolis extracts demonstrated antimicrobial activity with inhibition halos regarding the two microorganisms, *S. aureus* and *E. coli*. The results show that geopropolis may be a natural and practicable alternative in inhibiting growth of the tested bacteria, seeing that the inhibitory outcome was similar to the positive control performed with antibiotics.

Keywords: geopropolis, antimicrobial activity, *Melipona pernigra*, inhibitory.

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