

ANTIMICROBIAL ACTIVITY OF GEOPROPOLIS FROM DIFFERENT SPECIES OF STINGLESS BEES

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Abstract

Propolis is a complex mixture of secondary metabolites that can vary in color, composition and consistency according to geographic region, variety of collected plant and bee genetic. Recent studies have showed a therapeutic potential of propolis due its antimicrobial, antioxidant and healing activities. Nevertheless, most researches disclosed about chemical and pharmacological activity of propolis from *Apis mellifera* bees. Thus, this study aimed to evaluate the antimicrobial activity of geopropolis from stingless indigenous bees such as mandaçaia (*Melipona quadrifasciata*), manduri (*Melipona marginata*) and jataí (*Tetragonisca angustula*) bees. Geopropolis is made from plant resins and soil or clay. Geopropolis were collected during 2012 in Prudentópolis, Paraná and provided by the Laboratory of Chromatography and Natural Products (CRONAT) at the State University in the Midwest (UNICENTRO)/PR. The antimicrobial activity of geopropolis extracts was tested against gram-positives bacteria: *Staphylococcus aureus* ATCC 6538 and *Enterococcus faecalis* ATCC 29212 and Gram-negatives: *Escherichia coli* ATCC 8739 and *Pseudomonas aeruginosa* ATCC 25853. The geopropolis extracts were diluted in DMSO 10% and the antimicrobial activity was performed using the microdilution assay and Resazurin staining obtaining the Minimum Inhibitory Concentration (MIC). The Minimum Bactericidal Concentration (MBC) was obtained by count of colony forming units. Among the samples, the geopropolis from manduri bee showed the best antimicrobial activity against *S. aureus* (MIC: 290 µg/mL and CBM: 580 µg/mL) and *E. faecalis* (MIC and MBC: 450 µg/mL). Regarding to gram-negative bacteria, the geopropolis extract from manduri also showed the best antimicrobial action, with values of MIC and MBC < 820 µg/mL (*E. coli*). However, geopropolis extracts from mandaçaia and jatai bees showed poor antimicrobial activity against gram-positive and gram-negative bacteria. Thus, we concluded that the geopropolis from manduri showed better antimicrobial action among the tested geopropolis, although all propolis extracts also present antimicrobial activity.

Keywords: antimicrobial activity, geopropolis, Mandi, mandaçaia, jataí.

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