

TITLE: ANTIMICROBIAL ACTIVITIES AND ANTIOXIDANT PROPERTIES OF BRAZILIAN PROPOLIS EXTRACTS

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ABSTRACT:

Propolis is a resinous substance collected by honeybees from various plant sources and its chemical composition is dependent on the flora from which the material was collected. Worldwide, more than 300 compounds have been characterized in propolis samples and many of these substances show antimicrobial properties. The aim of this study was to evaluate *in vitro* antimicrobial and antioxidant activities of green, red and brown propolis ethanolic extracts obtained from different regions of Brazil. Green propolis extract was donated by the company Mel do Sol (Águas Lindas, Goiás), red propolis extract was obtained from Coruripe, Alagoas and brown propolis extract was obtained from Minas Gerais. The antimicrobial activity was determined through the Minimal Bactericide Concentration (MBC) against *Staphylococcus aureus* ATCC 25923, *Bacillus cereus* ATCC 14579 and *Streptococcus mutans* ATCC 25175 according to the Clinical and Laboratory Standards Institute. Total phenolic compounds were quantified by Folin-Ciocalteu and antioxidant properties were assessed by DPPH and ABTS. It was noted that all extracts showed activity against gram-positive bacteria tested. Among the tested microorganisms, *B. cereus* was the most sensitive strain, with MBC values ranging from 3-9 mg/mL. For *S. aureus*, the MBC values ranged from 8-20 mg/mL and for *S. mutans* the MBC values ranged from 12-13 mg/mL. Phenolic compound contents ranged from 0,86% (red propolis) to 1,54-1,86% (green and brown propolis), the antioxidant activity ranged from 186,83 mM TEAC (red propolis) to 274,78-275,91 mM TEAC (green and brown propolis) for ABTS and 53,96 mM TEAC (red propolis) to 94,11-111,92 mM TEAC (green propolis) for DPPH. Propolis antioxidant activity has been attributed to the high content of phenolic compounds in this natural substance. It was verified that the biological activity and composition of the Brazilian propolis extracts vary significantly, depending on the type of sample and geographical area of collection.

Key words: green propolis, red propolis, brown propolis, Minimal Bactericide Concentration, total phenolic compounds, DPPH, ABTS