

COMPARATIVE OF ANTIBIOTIC ACTIVITY OF BRAZILIAN GREEN PROPOLIS (G12) EXTRACTS AGAINST PATHOGENIC MICROORGANISMS

Authors: Graciela FUJIMOTO ^{1, 2}; Ariane Branadina Bernardo ²; Amanda Beatriz da Silva RODRIGUES ²; Arnaldo Yoshiteru KUAYE ¹

Institution:

1 - Food Technology Department, Faculty of Food Engineering, University of Campinas - UNICAMP, P.O.Box 6121, 13083-862, Campinas, SP, Brazil

2 - Technology College of Capão Bonito (FATEC), Capão Bonito, SP, Brazil

Propolis is a complex honeybee (*Apis mellifera*) product with resinous aspect, containing plant exudates and beeswax. The main botanical source of Green propolis is *Baccharis dracunculifolia*, which contains mainly flavonoids as artemillin C, pinocembrin and bacarin. Due to its flavonoid composition, this propolis has showed antioxidant, anti-inflammatory and antimicrobial activities. The aim of this study was to compare the minimal inhibitory concentration (MIC) of ethanol and concentrated Brazilian green propolis (G12) extracts against pathogenic microorganisms. Propolis sample was collected in an apiary of Capão Bonito - São Paulo State, (latitude 24° 00'21" south and longitude 48° 20'58" west). The ethanol propolis extract (EPE) was obtained by maceration of ground propolis in ethanol (80%) at 70 °C for 30 min, followed by centrifugation at 10000 xg. The concentrated propolis extract (CPE) was obtained by concentration of EPE in rotary evaporator at 50°C until ethanol removal. The MIC of propolis extracts were tested using microdilution plates in Mueller–Hinton broth. The pathogenic microorganisms were: *Bacillus cereus* NCTC 1145, *Staphylococcus aureus* ATCC 13565, *Staphylococcus aureus* ATCC 14458, *Staphylococcus aureus* ATCC 25923, *Listeria monocytogenes* ATCC 7644 and *Enterococcus faecalis* ATCC 29212. The results of MIC analysis show that EPE was more effective than EPC. The variation of MICs of EPC was between 39 µg.ml⁻¹ (for *B. cereus*) and 10000 µg.ml⁻¹ (for *S. aureus* ATCC 25923); for this extract no inhibition was observed against *L. monocytogenes*. The EPE was effective against all microorganisms; the inhibitory concentrations of EPE varied between 0.56 µg.ml⁻¹ (for *B. cereus*) and 156 µg.ml⁻¹ (for *S. aureus* ATCC 25923 and *L. monocytogenes*). These results show more resistance to *L. monocytogenes* and *S. aureus* ATCC 25923 to propolis. The higher effectiveness of EPE could indicate some influence of ethanol in the antimicrobial activity or the degradation of an antimicrobial component during de concentration process.

Keywords: concentrated propolis extract; ethanol propolis extract; minimal inhibitory concentration.