

Antimicrobial, Antiinflammatory, and Antioxidative Effects of Water- and Ethanol-extracted Brazilian Propolis

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Abstract

Propolis has been used for thousands of years in folk medicine for multiple purposes because it possesses antiinflammatory, antifungal, antiviral, and tissue regenerative properties. The aim of this study is to evaluate the antimicrobial, antiinflammatory, and antioxidative activities of 0.1% and 1.0% propolis both of water-extracted (proAQ) and ethanol-extracted (proAL) propolis for industrial applications. In studies on antimicrobial activities, the growth of *Staphylococcus aureus* ATCC 35556, *Salmonella enteritidis* ATCC 12021, *Escherichia coli* O157:H7, and *Candida parapsilosis* KCCM 35428 which are general food or clinical pathogens were tested. The results indicate that the antimicrobial effects of both 1.0% proAQ and 1.0% proAL were greater against the growth of *S. aureus* ATCC 35556 and *C. parapsilosis* KCCM 35428 rather than those of *S. enteritidis* ATCC 12021 and *E. coli* O157:H7. In addition, it appears that the antiinflammatory effect of proAL are greater than that of proAQ. The antiinflammatory effects were evaluated by measuring the inhibition of hyaluronidase activity *in vitro*. At a 1% concentration, the antiinflammatory effects of proAL were greater than that of proAQ. Finally, the antioxidative effects of 1% and 10% solutions of each extract sample were measured according to the TBA method at 40°C for 1, 2, 3, and 5 days and compared with 1.0% BHT. The results indicate that the antioxidative effects at 0.1% for both proAQ and proAL were not significantly different than 1.0% BHT ($p < 0.05$).

References

1. Burdock GA. Review of the biological properties and toxicity of propolis. *Food Chem. Toxicol.* 36: 341-363 (1998).