



CINNAMOMUM VERUM EXTRACT AND APIS MELLIFERA PROPOLIS TINCTURE AS ANTI-INFECTIVE AGENTS AGAINST MULTIRESTANT ACINETOBACTER BAUMANNII

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Abstract: Introduction: *Acinetobacter baumannii* is associated with healthcare-associated infections, representing a serious public health problem, as it increases the risk of death in critically ill and immunocompromised individuals admitted to hospitals. In 2017, the World Health Organization published a list of “priority pathogens” resistant to antibiotics, and *Acinetobacter baumannii* is the first on the list, placed at critical priority. Being resistant to multiple antibiotics. This species can express resistance to multiple antimicrobials, through different mechanisms, including the production of broad-spectrum β -lactamases enzymes, overexpression of efflux pumps and reduction of porin permeability. Therefore, the study of new therapeutic approaches such as phytotherapy presents itself as a possible solution to this problem. Within this context, propolis tincture from *Apis mellifera* and *Cinnamomum verum* extract present a rich repertoire of phytoconstituents for exploring biological action. Objectives: The present work aimed to evaluate the antimicrobial action of propolis tincture from *Apis mellifera* and *Cinnamomum verum* extract on multiresistant strains of *Acinetobacter baumannii*. Methodology: Propolis tincture was purchased at a concentration of 50% (50 mg/mL) and the ethanolic extract of *C. verum* at a concentration of 124.2 mg/mL. The antimicrobial analysis was performed on planktonic cultures, using the broth microdilution test, protocol M7-A6, according to the Clinical and Laboratory Standards Institute – CLSI. To obtain the minimum inhibitory concentration and minimum microbicidal concentration values the strains of *Acinetobacter baumannii* multiresistant to carbapenems were reactivated in cultures with 24 hours of incubation, followed by the constitution and standardization of microbial suspensions at 10^6 colony forming unit/mL. The extracts were diluted in 96-well microplates, using Brain heart Infusion culture medium with diluting agent,



performing 10 different concentrations that ranged from 12.5 mg/mL to 0.02 mg/mL for propolis and 31.07 mg/mL to 0.06 mg/mL from *Cinnamomum verum*. The microbial suspensions were dispensed over different concentrations of the extract. The plates were incubated for 24h to determine the minimum inhibitory concentration. The minimum microbicidal concentration was determined by sowing aliquots from the microplate, followed by analysis of colony growth. **Results:** Propolis tincture from *Apis mellifera* and *Cinnamomum verum* extract promoted minimum inhibitory concentration with 1.56 mg/ml and 31.07 mg/mL. The minimum microbicidal concentration was obtained with concentrations of 3.12 mg/mL and 31.07 mg/mL. **Conclusion:** the propolis tincture from *Apis mellifera* and the *Cinnamomum verum* extract promoted antimicrobial activity, showed minimum inhibitory concentration and minimum microbicidal concentration on a multidrug-resistant *Acinetobacter baumannii*, demonstrating a therapeutic potential to be explored in the global problem of antimicrobial resistance.

Key-words: cinnamon; bees; bacteria; antimicrobial agent; herbal medicine.