البحث الثالث:

Propolis Extract: A Possible Antiseptic Oral Care against Multidrug-Resistant Non-Fermenting Bacteria Isolated from Non-Ventilator Hospital-Acquired Pneumonia

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Abstract

Non-ventilator Hospital-acquired Pneumonia (NV-HAP) is a significant burden in acute care hospitals and poses a risk to nonelderly, non-intensive care unit (ICU) patients, which have been increasing worldwide. In addition, poor oral hygiene has been associated to significant increases in the number of cases of NV-HAP. Unfortunately, preventive options are limited. Thus, there is a need for oral antiseptics, similar to those of natural products or plant sources. The aim of this study was to assess the antibacterial activity of various bee products (BPs); for example, honey, propolis, and bee venom against multidrug-resistant (MDR) non-fermenting bacteria (e.g., Pseudomonas and Acinetobacter), which were collected from NV-HAP patients to investigate its use as a possible antiseptic oral care. Bacterial susceptibility to different antibiotics were performed. The antimicrobial activity of BPs against non-fermenting bacteria, the minimum inhibitory concentration (MIC), and the minimum bactericidal concentration (MBC) were assessed. Eighteen Pseudomonas aeruginosa isolates and five Acinetobacter baumannii isolates were identified. P. aeruginosa isolates displayed high resistance to the antibiotics: meropenem and imipenem (55.6% and 77.8% respectively), whereas A. baumannii isolates were 100%

resistant to meropenem and imipenem. All isolates remained sensitive to colistin. Propolis showed the best antibacterial activity ($p<0.001$) in comparison to honey and bee venom against P. aeruginosa

(13 - 36 mm, MIC =1.4-22.5%, and MBC=2.8-45% and A. baumannii (7-20 mm, MIC=5.6-22.5%, and MBC=11.3 -22.5%) While bee venom expressed the least antibacterial activity against all isolates with a zone diameter ranging from 0-12 mm, propolis, which is a non-toxic, natural, and inexpensive, had antibacterial activity towards the MDR bacteria: P. aeruginosa and A. baumannii collected from pneumonic patients. Additionally, we confirmed that propolis could be used as a potential antiseptic oral care product.