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Propolis-Sahara honeys preparation exhibits antibacterial and anti-biofilm activity against bacterial biofilms formed on urinary catheters

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Abstract

ObjectiveTo evaluate the antibacterial effect of Sahara honeys (SHs) against bacterial biofilms formed on urinary catheters in combination with propolis-Sahara honeys (P-SHs).MethodsThree clinical isolates were subjected to biofilm detection methods. The antibacterial and anti-biofilm activity for SHs and P-SHs were determined using agar well diffusion and the percentage of biofilm inhibition (PBI) methods.ResultsThe PBI for Gram-positive bacteria [Staphylococcus aureus (S. aureus)] was in the range of 0%–20%, while PBI for Gram-negative bacteria [Pseudomonas aeruginosa and Escherichia coli (E. coli)] were in range of 17%–57% and 16%–65%, respectively. The highest PBI (65%) was produced by SH2 only on E. coli. In agar well diffusion assay, zones of inhibition ranged from 11–20 mm (S. aureus), 9–19 mm (Pseudomonas aeruginosa) and 11–19 mm (E. coli). The highest inhibition (20 mm) was produced by SH1 only on S. aureus. In addition, the treatment of SHs and P-SHs catheters with a polymicrobial biofilms reduced biofilm formation after 48 h exposure period.ConclussionsSHs and P-SHs applied as a natural agent can be used as a prophylactic agent to prevent the formation of in vitro biofilm.

Keywords: Antibacterial Anti-biofilm Propolis Sahara honey