



BIOFILMS⁷

Microbial Works of Art



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Antibiofilm activity of Brazilian propolis extracts against *Staphylococcus aureus* producers isolated from goat and sheep mastitic milk

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Mastitis, inflammation of the mammary gland, causes reduction in milk yield and quality. The main etiologic agent is *Staphylococcus aureus*, usually very resistant to antimicrobials and often biofilm forming. Propolis is a resinous mass, rich in flavonoids, produced by honeybees *Apis mellifera*, which has earned the attention of many researchers due to its antimicrobial action. The aim of this study was to investigate the action of inhibiting *S. aureus* biofilm formation, and the ability to eliminate formed biofilm, by alcoholic extracts of green, red and brown propolis from Brazil. Ten isolates of *S. aureus* have been tested, 8 field isolates, 1 MRSA and 1 ATCC 25923, by microplate quantitative method. For the evaluation of inhibitory action, the isolates were inoculated, in triplicate, in Tryptic Soy Broth (TSB) 1% glucose in the presence of green (1), red (2) and brown (4) propolis extracts. Biofilm formation was evaluated by optical reading, compared to a negative control consisting of a mixture of TSB and extract. For biofilm elimination assay, extracts were added to plates with 24h cultures of the same isolates. Assays were repeated three times on three different days. Eight out of the 10 isolates produced less biofilm in the presence of the green propolis extracts, so the inhibitory effect is 80%. Brown propolis extracts inhibited the formation of biofilm in 10% to 70% of the isolates and the red extracts in 30% to 80%. Regarding the biofilm elimination activity, green propolis extract was positive for 9 out of the 10 isolates (90%), the brown propolis extracts were positive for 20% to 100% isolates and red extracts for 10% to 20% isolates. According to these results, green propolis extract showed to have the greater ability to prevent and disrupt biofilm produced by *S. aureus* and might be promising for mastitis control.