

TITLE: EVALUATION OF BIOLOGICAL POTENTIAL OF RENISUS PLANTS: ANTIMICROBIAL ACTIVITY AND BIOFILM INHIBITION OF CLINICAL IMPORTANCE MICROORGANISMS

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ABSTRACT:

Six species of the National Relation of Medicinal Plants of Interest to the Unified Health System (RENISUS) were selected to evaluate the antimicrobial potential. In the present work, leaves of *Ananas comosus* (CA), *Eugenia uniflora* (EU), *Morus nigra* (MN), *Psidium guajava* (PG), *Syzygium* spp (SJ) and fruit peels of *Punica granatum* (PuG) were used. In addition, *Psidium cattleianum* (PC) was selected because it is used by traditional medicine for the intestinal problems' treatment. The objective of this study was evaluate the antimicrobial activity and biofilm inhibition of crude plant extracts against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. The extracts were obtained by maceration (dry herb/ethanol ratio, 1:5, m/v). The extracts (0.5 mg/mL) were evaluated for antimicrobial activity by the microdilution test in 96-well plates. The evaluation of biofilm formation was performed using crystal violet 0.1% (m/v) as biofilm coloring agent, followed by spectrophotometer reading (600 nm). None of the extracts inhibited *E. coli* growth. However, *S. aureus* inhibition was detected in 49%, 34%, 28% and 20% for AC, PC, PuG and EU extracts, respectively. PuG, PC, EU, PG and SJ extracts inhibited *S. aureus* biofilm formation above 95%. These same extracts inhibited *E. coli* biofilm formation with inhibition percentages ranging from 43% to 85%. All extracts inhibited the growth of *C. albicans* (43-94%). A slight inhibition of *C. albicans* biofilm formation can be observed for PuG and SJ extracts. The leaves extract of "araçazeiro" (PC), guava (PG) and pomegranate peels extract (PuG) presented the best results of biofilm inhibition, both for *S. aureus* and *E. coli*. A concentration-dependent effect was observed with PC and PuG extracts on the biofilm inhibition with best results against *S. aureus*. Based on these results, tested species, in special PC and PuG, deserve attention in regard to the discovery of new substances with antimicrobial potential, mainly in relation to the biofilm inhibition activity, an important virulence factor used as a survival strategy of microorganisms.

Keywords: medicinal plants, antimicrobial, antibiofilm.

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