

Title: ANALYSIS OF THE ANTIBACTERIAL ACTIVITY OF GALLIC ACID AND TANNIN EXTRACTED FROM *COCHLOSPERMUM REGIUM* AGAINST GRAM NEGATIVE AND GRAM POSITIVE BACTERIA OF MEDICAL IMPORTANCE

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Summary:

The specie of *Cochlospermum regium*, known as as yellow cotton tree, (Algodão do Cerrado in Brazil), is traditionally applied in folk medicine in the treatment or control of diseases. As the incidence of multiresistant bacteria in nosocomial infections has increased, searching for new antimicrobials from natural sources is an important alternative to combat these infections. The objective of this study was to evaluate the in vitro bacteriostatic and bactericidal activities of these compounds found in *C.regium* against Gram negative *Acinetobacter baumannii* (ATCC19606) and Gram-positive *Staphylococcus aureus* (ATCC29213), *Staphylococcus saprophyticus* (ATCC15305), *Staphylococcus mutans* (ATCC25174) and *Staphylococcus epidermidis* (ATCC12.228). The antibacterial activity of gallic acid and tannin was evaluated by determining the Minimum Inhibitory Concentration (MIC) by broth microdilution technique and the Minimum Bactericidal Concentration (MBC) by agar microdilution. The compounds were diluted to concentrations ranging from 1000 to 31.25 $\mu\text{g.mL}^{-1}$ in 20% of dimethylsulfoxide (v/v). The first results showed that gallic acid has antimicrobial activity, inhibiting the growth of *S. aureus* and *K.pneumoniae* with a MIC value equal to 500 $\mu\text{g.mL}^{-1}$. It also inhibited the growth of *E.coli* and *S. mutans* with a MIC value of 250 $\mu\text{g.mL}^{-1}$, and *S. saprophyticus* at the concentration of 125 $\mu\text{g.mL}^{-1}$. The tannin showed MIC values ranging from 1000 to 31.25 $\mu\text{g.mL}^{-1}$, and the best antimicrobial activity was observed against *A.baumannii* (MIC = 31,25 $\mu\text{g.mL}^{-1}$) and *S. epidermidis* (MIC = 62,5 $\mu\text{g. mL}^{-1}$). It also presented bactericidal effect against all tested bacteria. The MBC of gallic acid was 500 $\mu\text{g.mL}^{-1}$ against *E.coli* and the MBC of tannin was 1000 $\mu\text{g.mL}^{-1}$ against *A. baumannii*, *S. aureus* and *S. epidermidis*. The results indicated that these compounds found in root of *C.regium* have an antimicrobial activity and provide subsidies for research and discovery of new antimicrobial agents derived from this plant. Studies are being conducted in our laboratory to investigate the mechanisms of action against these bacterial groups.

Keywords: *Cochlospermum regium*, antibacterial activity, gallic acid and tannins.

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