

## ULTRASTRUCTURAL ALTERATIONS OF *STAPHYLOCOCCUS AUREUS* CELLS AFTER EXPOSURE TO *HYMENAEA STIGONOCARPA* MART. EX HAYNE EXTRACT

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*Hymenaea stigonocarpa* Mart. ex Hayne (Fabaceae) is a medicinal plant found in the Brazilian savannah and popularly known as "Jatobá-do-cerrado". Its stem barks are widely used in infusion or decoction to treat stomach pain, asthma, bronchitis, ulcers, diarrhea, flu and cough. Phytochemical studies of *Hymenaea stigonocarpa* showed the presence of terpenes and sesquiterpenes, fatty acids, flavonoids and tannins, metabolites recognized by biological activity. Methanolic extract of *Hymenaea stigonocarpa* stem barks has antidiarrheal activity and healing properties on experimental gastric and duodenal ulcers. However, studies on the antimicrobial activity from *H. stigonocarpa* stem barks have not yet been published. Based on this report, the aim of this research was to investigate the antimicrobial activity of different extracts from *Hymenaea stigonocarpa* stem barks by microdilution method and to observe ultrastructural alterations caused by hydroalcoholic extract on *Staphylococcus aureus*. The cyclohexanic, ethyl acetate, ethanol, aqueous and hydroalcoholic extracts were obtained by maceration. All extracts were subjected to phytochemical screening. The observation of ultrastructural alterations was performed by Electron Transmission Microscopy. Terpenes and coumarins were detected in the cyclohexanic extract. Flavonoids and condensed tannins were present in extracts. The extracts with the highest contents of tannins, ethanol (EE) and hydroalcoholic (HE) showed also the highest antimicrobial activity. The MIC values ranged from 64 to 526 µg/mL. Presence of the thick cell wall, undulating outer layer, abnormal septa, leakage of the cytoplasmic contents, and absence of cell wall and cell lyses were the main alterations observed on *Staphylococcus aureus* ATCC 33591 after treatment with the *H. stigonocarpa* hydroalcoholic extract. The presence of phenolic compounds like flavonoids and tannins are possibly the reason for the antimicrobial activity.

**Key words:** *H. stigonocarpa*, Ultrastructural alterations, MRSA