

TITLE: ANTIMICROBIAL ACTIVITY OF THE ESSENTIAL OIL FROM *Lippia gracilis* Schauer ASSOCIATED WITH A NATURAL OINTMENT AGAINST *Staphylococcus aureus* STRAINS RELATED TO WOUND INFECTION

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ABSTRACT:

Delayed wound healing is commonly the result of bacterial infections. One of the main species related to wound infections is *Staphylococcus aureus*. Natural products, such as essential oils, which have anti-inflammatory, antioxidant, and antibacterial properties. So, can be a natural alternative to aid in the healing process of infected wounds. Thus, the antimicrobial potential of the essential oil of *Lippia gracilis* was evaluated, a species native to northeastern Brazil that has antimicrobial activity and helps in the treatment of burns, wounds, and ulcers. Furthermore, the antimicrobial activity of the essential oil associated with a natural ointment was evaluated. The essential oil was extracted by hydrodistillation using Clevenger's apparatus. Moreover, an ointment with substances derived from coconut and olive oil was manipulated. In this study, three strains of *S. aureus* were used: ATCC 25923, ATCC 700698, and JKD6008. The antimicrobial activity of essential oil, ointment, and association of oil and ointment was determined by microdilution in plates by minimum inhibitory concentration (MIC) and a minimum bactericidal concentration (MBC). Tested concentrations of *L. gracilis* essential oil and ointment ranged from 1000 to 15.6 µg/mL and were solubilized in 1% dimethyl sulfoxide (DMSO). The results showed that the essential oil of *L. gracilis* showed MIC value of 1000 µg/mL and absence of MBC on all strains tested. Similar effect was observed for the combined action of *L. gracilis* and ointment. On the other hand, ointment alone has no antimicrobial activity. In conclusion, *L. gracilis* oil showed antimicrobial activity on *S. aureus* strains related to skin infections. Furthermore, although the ointment does not have antimicrobial activity, its use as a natural excipient to essential oil application is viable.

Keywords: Natural products; essential oil; antimicrobial activity; *Lippia gracilis*.

Development Agency: CAPES.