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DETERMINATION OF MINIMUM INHIBITORY CONCENTRATION OF KLEBSIELLA PNEUMONIAE KPC FRONT OF THE ESSENTIAL OIL OF MELALEUCA ALTERNIFOLIA

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Abstract

The essential oil of Melaleuca alternifolia (OTT) has antifungal, anti-inflammatory and antimicrobial effects reported in the literature that attributes this last to more than about 70% of terpenes present in its composition, and its mechanism of action consists in the breakdown of the membrane cytoplasmic activity leading to membrane protein damage, cytoplasmic coagulation, changes in electron fluxes and transport mechanisms and above all, the interruption of the proton motive force. In this century, the advent of multidrug-resistant microorganisms to available drugs has raised widespread concern, prompting industry and researchers to opt for alternative mechanisms in the treatment of some bacterial infections. The objective of the study was to evaluate the antibacterial properties of OTT against Klebsiella pneumoniae producing carbapenemase (KPC) and its standard strain K. pneumoniae ATCC 13883 by the Minimal Inhibitory Concentration (MIC) method by macrodilution and Spot-on-the-lawn. stipulated for KPC and K. pneumoniae ATCC to MIC in 0.25% OTT by the two

methodologies, proving the antimicrobial activity of the oil and concluding that the mechanism of resistance to carbapenems does not influence the sensitivity to OTT.

Keywords - Melaleuca alternifolia, essential oil, CIM, Klebsiella peneumoniae carbapenemase, KPC.