TITLE: ANTIBIOFILM ACTIVITY OF β-LAPACHONE AND LAPACHOL OXIME AGAINST CLINICAL ISOLATES OF *Staphylococcus aureus*

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ABSTRACT:
The emergence of antimicrobial resistance among bacteria such as *Staphylococcus aureus* has led to development of several studies for the search for therapeutic alternatives for the treatment of infections. These studies aim to resolve this problem by characterizing the mechanisms of resistance of these bacteria such as biofilm formation. For the purpose to control the emergence of this problem and potentiate the activity of antibiotics research involving natural substances are among the new therapeutic alternatives for the treatment of infections. β-lapachone and lapachol oxime are semi-synthetic derivatives from Lapachol with antimicrobial potential. Thus, the objective of the study was to verify the antibiofilm activity of β-Lapachone and Lapachol Oxime against clinical isolates of *Staphylococcus aureus*. For this, five clinical isolates of blood cultures characterized as strong biofilm producers were cultured in 0.25% TSBg (Tryptone Soya Broth). Thereafter, an aliquot was transferred to a microplate with the antimicrobial solution containing the equivalent of half the CBM value. After 24 h of incubation at 37°C, the microplates were submitted to a staining methodology with 0.25% violet crystal. The absorbance reading was measured at 620 nm. The Scanning Electron Microscopy (SEM) analysis was performed using a fixation protocol in stainless steel blade with glutaraldehyde and solution of ethanol. As results, it was observed that the isolates when placed in the presence of the substances under study (β-Lapachone and Lapachol Oxima) interfered with the biofilm formation leaving a condition of strong producer to moderate or weak. In microscopy, the effect was observed with the reduction of the population of biofilm forming cells when compared to the control (ATCC 25923). Therefore, it was possible to conclude the antibiofilm potential of these substances justifying the importance of natural products as agents for the synthesis of new compounds with biological activity.

Keywords: MRSA, SEM, natural products, chemical synthesis

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