

TITLE: ANTIOXIDANT AND BACTERICIDAL EFFECTS OF CINNAMALDEHYDE AGAINST *Corynebacterium pseudodiphtheriticum* IN VITRO.

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ABSTRACT:

Corynebacterium pseudodiphtheriticum is a Gram-positive bacillus, non-lipophilic, non-fermentative, urease and positive nitrate. The species is a common member of the normal nasal microbiota of the nostrils and throats and has been associated with serious infections, mainly in immunocompromised patients. Natural products extracted from plants are being used as a good alternative for the discovery of new active antimicrobial agents. Cinnamaldehyde is the main active compound of cinnamon bark and it is used for medicinal purposes, as anti-inflammatory, antiemetic and analgesic. This study aimed to investigate the antioxidant activity of cinnamaldehyde oil and the effectiveness on *Corynebacterium pseudodiphtheriticum*. The antioxidant activity was evaluated by using the phosphomolybdenum complex reduction assays. Sample solutions were combined in a tube with ammonium molybdate, sodium phosphate and sulfuric acid. The tubes were capped and incubated in water bath at 90 °C for 90 minutes. After the samples had cooled to room temperature, the absorbance of aqueous solutions was measured. Minimum inhibitory concentrations (MICs) of cinnamaldehyde oil were performed by dilution in the 96-well plates. After incubation, of resazurin solution were added to each well, incubated and assessed for color development. The MIC was defined as the lowest agent concentration that prevented blue to pink color change. For the determination of Minimum Bactericidal Concentrations (MBCs), a aliquot of the wells that showed no visible microbial growth was removed and inoculated into Petri dishes containig Mueller Hinton agar. The MBC is identified by determining the lowest concentration of agent that prevents the growth of an organism after subculture on to agent-free media. When carrying out the phosphomolybdenum assay, we observed that cinnamaldehyde inhibited 42% of the

phosphomolybdenum complex. Cinnamaldehyde inhibited the growth of all bacteria assayed in this study. The MIC values ranged from 0.0625 to 0.50 mg/ml. The oil was bactericidal only for some strains. This study suggests that cinnamaldehyde has a good antioxidant activity, which may contribute to antibacterial activity against *C. pseudodiphtheriticum* strains.

Keywords: phosphomolybdenum assay, antibacterial, cinnamon bark, Maranhão.

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