

TITLE: ANTIMICROBIAL ACTION OF POSITIVE ENANTIOMER OF ALPHA-PINENO IN FRONT OF BACTERIAL STRAINS GRAM POSITIVE

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ABSTRACT:

The emergence of antimicrobial resistant bacteria available for the treatment of infections caused by pathogenic strains is a public health problem. Infections caused by multiresistant microorganisms lead to the use of high cost antimicrobial agents, as well as a higher morbidity and mortality rate of these infections. Therefore, the search for new molecules as an efficient and low cost therapeutic option for use in bacterial infections is of utmost importance and urgency. In this context, plants appear as sources of potential compounds due to the diversity and complex structure of the substances present that can act in synergy with other compounds, leading to mimicking the side effects associated with the treatment of conventional antimicrobials. The aim of this work was to evaluate the antibacterial action of terpene, (+) - alpha-pinene against gram positive strains of *Staphylococcus aureus* ATCC 25923 and *Enterococcus faecalis* ATCC 29212. To determine the antibacterial action of the phytoconstituent, the disk diffusion method was used. For this, (+) - α -pinene was dissolved in 1% Tween 80 plus DMSO at a ratio of 5% and diluted in sterile distilled water to reach the concentrations of 640, 320 and 160 $\mu\text{L}/\text{mL}$. The experiments were performed in triplicate and the results were expressed by the mean diameter of the growth inhibition halos, in mm, formed around the discs containing the phytoconstituent. In addition to monoterpene, a standard antibiotic, amikacin, and the diluents used to arrive at the final concentration of the dilutions were tested. After 24 hours of incubation at 35 ± 2 ° C, monoterpene was observed to have no activity against the *E. faecalis* strain at any of the tested concentrations. For the *S. aureus* strain, growth inhibition halo formation was measured, measuring 27.7 mm (pure), 19.7 mm (640 $\mu\text{L}/\text{mL}$), 16.3 mm (320 $\mu\text{L}/\text{mL}$) and 11 mm (160 $\mu\text{L}/\text{mL}$). In this way, it is possible to conclude that the (+) - α -pinene was able to inhibit the growth of the *S. aureus* strain and could be a possible therapeutic tool in the treatment of bacterial infections caused by these gram positive cocci. From this perspective, it is suggested that new research be done to better characterize the phytoconstituent action.

Keywords: Alpha-pinene, antibacterial activity, *Staphylococcus aureus*, *Enterococcus faecalis*

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