

ANTIBACTERIAL ACTIVITY OF THE ESSENTIAL OIL FROM THE GUAVA LEAVES AGAINST *Pseudomonas aeruginosa*

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Considering the increase of the resistant bacteria to the antibiotics, the essential oils have become prominent because of their bioactive substances. This work aims to evaluate the antibacterial capacity of the essential oil from the guava leaves (*Psidium guajava*) in different concentrations (400, 200, 100, 25, 12.5, 6.25, 3.125, 1.56, 0.781, 0.390 0.195 $\mu\text{L}\cdot\text{mL}^{-1}$) against the *P. aeruginosa* strain. The experiment was conducted in the microbiology laboratory at UTFPR Campus of Dois Vizinhos, in March, 2017. The oil was extracted from the guava leaves, which has been cultivated in the ecological farm, in Canelinha – SC. The extraction was carried out through the hydrodistillation method, and the composition was determined by the high performance chromatography. The antibacterial activity was determined *in vitro* against *P. aeruginosa* strains INCQS 00025, it has been supplied by the Osvaldo Cruz Foundation. The method M07-A6- 2015 was used in order to determine the minimum inhibitory concentration (MIC) from the CLSI. It was emulsified 400 μL of oil in 20 μL of polysorbate 80 and 580 μL of Mueller Hinton broth in the eppendorff tube. After that, it was added up 100 μL of Mueller Hinton broth to the microplate wells and 200 μL of the oil dilution in the column 1. Serial essential oil dilutions were performed up to 0.097 $\mu\text{L}\cdot\text{mL}^{-1}$. It was added 100 μL of bacterial inoculum adjusted in $5 \times 10^4 \text{UFC}\cdot\text{mL}^{-1}$. The plates were incubated at 37°C for 24h. It was added 20 μL of the indicative 2,3,5-triphenyltetrazolium in the proportion of 0.5% for 1h, after that, the MIC's readings were done, in duplicate. The results showed that the concentrations tested were not efficient against *P. aeruginosa* strain, however this may be justified because of some sesquiterpenes degradation from the oil or for the non-sensitization of the bacteria to the concentrations tested. The oil constituents of the guava leaves are based on sesquiterpenes. It is composed by 19.9% β -selinene; 16.1% α -salinene; 14.0% α -caryophyllene; 13.9% β -caryophyllene; 7.9% juniper camphor; 6.9% of caryophyllene oxide; 5.2% humulene oxide; 4.2% curzerene and other compounds (11.7%). Essential oils are usually lipophilic and they normally accumulate in the lipid bilayer of the bacterial cytoplasmic membrane, which can increase the permeability, and inhibiting the microorganism. So, it was concluded that the guava essential oil at concentrations of 400 $\mu\text{L}\cdot\text{mL}^{-1}$ has not showed *in vitro* effectiveness against the *P. aeruginosa* strain.

KEYWORDS: *Psidium guajava*, bacteria, chemical components, *Pseudomonas aeruginosa*.