TITLE: *In vitro* EVALUATION OF ANTIMICROBIAL ACTIVITY OF OZONIZED COCONUT AND OLIVE OIL AGAINST *Escherichia coli* AND *Staphylococcus aureus*

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ABSTRACT:
The progressive increasing in the number of resistant and super-resistant bacteria, especially in hospital infections, is one of the most concerning problems nowadays, and it is considered a public health problem. Various microorganisms are related with these high rates of resistance, including both Gram negative and Gram positive. *Staphylococcus aureus* and *Escherichia coli* are among them. In this sense, the searching for new antibacterial drugs are of paramount importance, and it is one of the major objectives of researchers all around the world. Thus, the objective of this work was to evaluate the antimicrobial activity of ozonized coconut and olive oils.The minimum inhibitory concentration (MIC) was determined using the broth microdilution method, according to the Clinical & Laboratory Standards Institute (CLSI), with some modifications. The American Type Culture Collection (ATCC) strains of *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 25923) were used. Besides the ozonized oils, pure oils and a reference drug was used in each assay. The coconut oils, ozonized and pure, were tested in concentrations that ranged from 114,425 µg/mL to 447 µg/mL and from 116,05 µg/mL to 453 µg/mL, respectively. The olive oils, ozonized and pure, were tested in concentrations that ranged from 109,800 µg/mL to 428 µg/mL and from 110,500 µg/mL to 431 µg/mL, respectively. The MIC of ozonized coconut oil was 28,606 µg/mL against *E. coli* and 14,303 µg/mL against *S. aureus.* For the pure coconut oil the MIC was 116,050 µg/mL against both strains tested. For the ozonized olive oil, the MIC was 54,900 µg/mL and 27,450 µg/mL against *E. coli* and *S. aureus* respectively. The MIC of pure olive oil was equal 110,500 µg/mL for both strains. Even though the pure oils have demonstrated activity against the strains, it is visible that the addition of ozone was responsible for an increase in the bactericide activity, with consequent decrease of MIC. It could be explained due to the oxidative activity that ozone can exert in nucleic acids and amino acids, which can lead to bacterial lysis.

Keywords: ozonized oil, minimum inhibitory concentration, *Escherichia coli*, *Staphylococcus aureus*.