

## Antibacterial activity of essential oils of oregano and cloves and their major compounds

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**Introduction:** Essential oils are volatile compounds from part of the secondary metabolites of plants, acting as a defense mechanism. Several chemical components are present in the oils such as terpenes, monoterpenes, polyphenols, some of those components can represent more than 70% of the oil composition, such as eugenol in the essential oil of cloves and carvacrol in the essential oil of oregano. Essential oils are being studied for their antimicrobial activity against fungi and bacteria, and this activity may be related to its isolated compound, as the majority. **Objective:** Evaluate the antibacterial activity of essential oils of oregano and cloves and their major compounds on strains ATCC of *Listeria monocytogenes* 15513, *Staphylococcus aureus* 25923 and *Escherichia coli* 43895. **Methods:** The essential oils of oregano and cloves were obtained from fresh samples by the method of steam distillation of the water and chemically characterized by chromatography coupled with mass spectrometry. The eugenol and carvacrol were obtained from Sigma Aldrich. There was used microdilution methodology for determining the minimal inhibitory concentration (MIC) of *L. monocytogenes*, *E.coli* and *S.aureus* for each compound tested. There were tested eleven different concentrations of each product varied from 45 ug / ml to 0.5 ug/ ml. **Results:** The essential oil of cloves and its isolated compound, eugenol had the same MIC of three strains of bacteria: 5ug/ml; however the carvacrol obtained a greater antibacterial activity than the essential oil of oregano. Carvacrol inhibited bacterial growth for all concentrations tested, achieving a higher antibacterial activity. **Conclusion:** The antibacterial activity of the essential oils may be due to synergism of the chemical composition the oil or only their isolated compounds. The antibacterial action of clove and eugenol was the same, showing that in this case the antibacterial action of essential oil of clove can be directly related to their major compound, without any influence of other compounds present in essential oil cravo. However with the essential oil of oregano, the major compound carvacrol showed better antibacterial activity than the essential oil in the three strains tested, showing that in this case a compound present in oregano essential oil reduces the antibacterial activity of carvacrol.

**Keywords:** Essential oils, Isolated compounds, Antibacterial activity