

TITLE: ANTIBACTERIAL ACTIVITY OF CORIANDER AND OREGANO ESSENTIAL OILS AND THEIR EFFECTS ON THE ASSOCIATION WITH CHEMICAL FOOD PRESERVATIVES

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ABSTRACT:

The use of chemical preservatives for food preservation is a necessary factor for the physical and microbiological stability of these products. However, the continued use of these additives is causing the resistance of some microorganisms, as well harm the health of consumers. Thus, the search for natural antimicrobials isolated or associated with other substances is becoming increasingly necessary in food preservation practices. Therefore, the objective this work was to evaluate the antibacterial activity of coriander (*Coriandrum sativum* L.) and oregano (*Origanum vulgare* L.) essential oils, as well its effects on the association with chemical preservatives methylparaben and sodium metabisulphite against bacteria transmitted by the food. The essential oils were obtained from the company Laszlo Aromatherapy Ltda, certified in the commercialization of natural products. The antibacterial potential was determined by the Minimal Inhibitory Concentration (MIC) method by broth microdilution against Gram-positive bacteria *Bacillus cereus* (ATCC 11778) and *Staphylococcus aureus* (ATCC 14458) and Gram-negative bacteria *Escherichia coli* (ATCC 10536) and *Salmonella enterica* (ATCC 06539). For the evaluation of the synergistic potential the checkerboard method was used. Oregano essential oil had MIC of 0.62 mg.mL⁻¹ against *E. coli*, *S. aureus* and *B.cereus*. However, a synergistic effect was observed only against *S. aureus* (FICI 0.49) when associated with the methylparaben preservative. When combining the essential oils with sodium metabisulphite, the presence of an additive effect was observed against all tested bacteria. The most sensitive coriander oil strain was *S. enterica* (MIC 0.62 mg.mL⁻¹), followed by *S. aureus*, *B. cereus* and *E. coli* (MIC 1.25 mg.mL⁻¹). In the association of coriander and methylparaben essential oil, it was observed synergism against *E. coli* (FICI 0.37), obtaining a reduction of MIC of the chemical preservative in the presence of low concentration of essential oil. Therefore, additional studies should be carried out to verify the possibility of using these essential oils isolated or in association for the preservation of food products.

Keywords: FOOD PRESERVATION, MINIMAL INHIBITORY CONCENTRATION, NATURAL ANTIMICROBIALS, SYNERGISM.