ANTIMICROBIAL ACTIVITY OF ESSENTIAL OILS OF THYMUS VULGARIS L. AND SATUREJA HORTENSIS L., THYMOL AND CARVACROL AND SYNERGISTIC POTENTIAL AGAINST SALMONELLA SPP.

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The antimicrobial activity of plant oils and extracts has been recognized for many years. Many naturally occurring compounds found in edible and medicinal plants, herbs, and spices have been shown to possess antimicrobial functions and could serve as a source of antimicrobial agents against foodborne pathogens. The aim of this study was to evaluate the antibacterial activity of Thymus vulgaris L. (thyme), Satureja hortensis L. (savory) essential oils and their constituents thymol and carvacrol and evaluate their synergistic potential against Salmonella spp. The minimum inhibitory concentration (MIC) and minimum bactericide concentration (MBC) was determined by broth microdilution method according the Clinical Laboratory Standards Institute (CLSI 2009). The synergistic action of thymol and carvacrol was evaluated in 96-well microplates by the checkerboard method. The MIC of thyme was 1250µg/mL and savory showed a MIC of 2500µg/mL against Salmonella spp. The MBC was identical to the MIC in all bacterial strains evaluated. Thymol and carvacrol inhibited bacterial growth in concentrations of 312 µg/mL and 156 µg/mL, respectively, indicating strong antimicrobial activity. The combined constituents of essential oils, thymol and carvacrol showed a Fractional Inhibitory Concentration (FIC) index equal to 0.141, resulting in a synergic effect against Salmonella spp. The results showed that these compounds may be an alternative for the control of Salmonella spp. in food.