

TITLE: DETERMINATION OF ANTIMICROBIAL ACTIVITY OF GARLIC ESSENTIAL OIL, THYME ESSENTIAL OIL AND OIL BLEND AGAINST THE GROWTH OF ENTEROPATHOGENIC *Escherichia coli*, *Listeria monocytogenes*, *Salmonella* Enteritidis AND *Staphylococcus aureus*

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ABSTRACT: Currently, there is a constant research on the use of natural additives to ensure the safety of food products, due to their antibacterial properties and acting as a substitute for preservatives. It is worth noting the use of essential oils derived from spices, which can be used synergistically to contribute with antibacterial and flavoring effects respectively. The garlic essential oil is obtained from edible bulbs of the plant *Allium sativum* commonly used in world cuisine. Studies prove that this oil has antiatherosclerotic, anticancer and antimicrobial action. The thyme (*Thymus vulgaris*) is a plant used as a condiment, medicinal product and also present in cosmetic products. The thyme essential oil has proven inhibitory activities against bacteria and yeast. Among the microorganisms present in the food industry that can be associated with contaminations and foodborne diseases, we highlight bacteria of the species: *Listeria monocytogenes*, *Salmonella* Enteritidis, *Escherichia coli* and *Staphylococcus aureus*. The objective of this study was to evaluate the antibacterial effect of the garlic essential oil, thyme essential oil and a blend of both on Enteropathogenic *Escherichia coli* ATCC 35401, *Listeria monocytogenes* ATCC 19117, *Salmonella* Enteritidis ATCC S64 and *Staphylococcus aureus* ATCC 5674. The garlic and thyme minimum bactericidal concentration (MBC) was determined using the broth microdilution method in microplates with TSB solutions plus 0,5% Tween 80 and essential oil in the following concentrations (%): 5,0; 3,75; 3,0; 0,5; 0,25 and 0,11 (v / v). The microplates were sealed and incubated at 37° C for 24 hours. The MBC of the major component was one where, after incubation, there was no bacterial growth on the plate. For the garlic essential oil there was bactericidal action from 0,5% (v / v), and for thyme essential oil there was bactericidal action in 0,5% (v / v) for all bacteria. There was greater inhibition of the oil blends on the bacterium *Listeria monocytogenes* with 0,5% (v / v), indicating synergism for this bacterium. The results demonstrate a promising alternative to reduce contamination in the food industry.

Keywords: oil blend, food contamination, natural additives, food security, essential oils

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