

EVALUATION OF THE ANTIMICROBIAL ACTIVITY OF DIFFERENT NATURAL EXTRACTS USED TO MARINATE A MEAT MATRIX ARTIFICIALLY CONTAMINATED WITH FOODBORNE PATHOGENS

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ABSTRACT

The use of natural extracts to inhibit foodborne pathogens has been an increasingly explored and debated topic. In addition to their antimicrobial capabilities, they also provide health benefits and allow the reduction of artificial additives in the food industry. In this context, this work aimed to test the antimicrobial activity of three natural extracts against three food industry target pathogens, using each extract solution to marinate an artificially contaminated meat matrix.

In culture medium, Rosemary (64 mg/mL) and Shiitake (250 mg/mL) extracts showed high antimicrobial capacity against the tested pathogens, with respective reductions of 3.77 ± 0.32 and 3.81 ± 0.32 log cycles for *Escherichia coli*, 3.97 ± 0.98 and 3.54 ± 0.67 log cycles for *Listeria monocytogenes*, 3.64 ± 0.32 and 3.57 ± 0.17 log cycles for *Salmonella* spp., and 4.02 ± 0.82 and 4.44 ± 0.08 log cycles for *Campylobacter* spp. In addition, Oleuropein extract (250 mg/mL) inhibited all pathogens to values below the detection limit of the enumeration technique (<1.3 log CFU/mL). After marinating a meat matrix contaminated with each pathogen individually, it was possible to observe that only significant reductions of *Campylobacter* spp. occurred in the meat marinated with the Oleuropein ($p=0.071$) and Shiitake ($p=0.033$) solution.

Despite being promising, the studied extracts did not significantly reduce the tested pathogens since they were protected by the meat matrix. Future studies of the synergy between the studied extracts, as well as their incorporation into different food matrices, would be interesting and lead to new beneficial discoveries for the entire food industry.