High Pressure Processing for Food Safety

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Food preservation using high pressure is a promising technique in food industry as it offers numerous opportunities for developing new shelf stable foods with high nutritional value and excellent organoleptic characteristics.

High pressure is an alternative to thermal processing. The resistance of micro-organisms to pressure varies considerably depending on the pressure range applied, temperature and treatment duration, and type of micro-organism. Generally Gram-positive bacteria are more resistant to pressure than Gram-negative bacteria, moulds and yeast. The nature of the food is important, as there may be substances which protect the micro-organism from high pressure.

Nowadays rapid progress toward commercial exploitation has to be made but still require close collaboration between researches, food and equipment manufacturers and proper financial support.

The aim of this study was to determine the effect of high pressure on survival of *Listeria monocytogenes* on the artificially contaminated ham, cheese and fruit juices containing bacterial population of above 10^6 micro-organism.

The influence of high pressure treatment on microbial quality and shelf life prolongation of pork ham and loin was the second stage of our research.

Results indicate that in the samples of pure culture of *Listeria monocytogenes* and in the samples of investigated foods the number of this bacteria decreased proportionally to the increase in high pressure values and time treatment and the effect of these two factors is statistically significant ($P \leq 0{,}001$).

The usefulness of high pressure treatment for inactivation of micro-organisms and shelf life prolongation of two types of cooked pork ham and raw smoked pork loin produced according to two formulas that differed in the percentage of sodium nitrite (0,01% and 0,015%) and sodium chloride (1,5% and 2,5%), expressed as a percentage of the finished products, was studied.

Significant decrease of microbiological parameters studied such as: total bacteria count psychrophylic bacteria and enterococci was observed. Results point out that high pressure treatment prolonged shelf life of cooked pork ham and raw smoked pork loin, up to 8 weeks. Products present good microbiological and sensory quality.

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