

## DEVELOPMENT OF INNOVATIVE HURDLE SYSTEMS USING MINIMAL PROCESSING TECHNIQUES FOR MEAT PRESERVATION

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### Abstract

With the new technological innovations in the food industry, consumer habits have been shifted from conventional processing towards minimal processing techniques which provide more nutritious food with improved sensory attributes. In recent years, among minimal processing techniques, sous-vide technology and high hydrostatic pressure effects on the quality and safety of meat products have had a growing attention among researchers. This paper aims to highlight the possibilities of a combination of both techniques hurdles which would act as innovative hurdle systems for meat preservation.

Recently sous vide technology has had an increasing application for meat processing in the catering industry, restaurants, and households. This technique provides meat products with higher water-holding capacity, minimal impact on nutritional properties, and better sensory characteristics. Sous vide technology is an example of a hurdle system that includes vacuum packaging, mild heat treatment, and rapid chilling of meat. However, applying such mild heat treatment could possibly present a food safety risk especially regarding heat-resistant microorganisms. In this regard, high hydrostatic pressure processing depending on pressure and time has been shown to be an effective technology for the inactivation of pathogenic bacteria in meat products without altering their sensorial and nutritional properties. Pressure treatments at 400 - 600 MPa have been shown effective in significantly decreasing the pressure-resistant Gram-positive bacteria such as *Listeria monocytogenes*, and *Staphylococcus aureus*. However, it has been reported that very high-pressure treatments could potentially cause changes in the texture and color properties of the meat.

This review could help in developing innovative hurdle systems using the combination of sous vide and high hydrostatic pressure as minimal processing technologies for the preservation of meat products. However, it is necessary to optimize the pressure and heating parameters and the order of the minimal processing techniques to achieve safe and high-quality meat products.

**Key words:** *Sous-vide, High hydrostatic pressure, Meat, Hurdle technology.*