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Dehydration-impregnation by soaking coupled with fermentation by *Lactobacillus sakei* in the treatment of meat

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Traditional meat preservation processes often combine unit operations such as salting, smoking, fermentation and drying. In tropical countries, elevated temperatures and high relative humidity, poor infrastructure and improper slaughterhouse practices explain the need for more drastic processes (more salt, more water loss) when it comes to meat preservation. The end goal of our research is to assemble a new process that enables the production, in tropical conditions of shelf-stable and ready-to-eat meat products by combining Dehydration-Impregnation by Soaking (DIS) as a rapid pre-treatment of meat, a controlled lactic fermentation, and a final drying step.

We analyzed the feasibility of coupling DIS with a subsequent lactic fermentation in the treatment of meat. A series of beef fillets were subjected to three different DIS treatments. The resulting DIS-treated fillets had three different characteristics in terms of water activity, salt and fermentable sugars contents. Fillets issued from the DIS treatment with the shortest immersion time and the highest salt concentration in the DIS bath were inoculated with *Lactobacillus sakei* (a control group was left without inoculation).

After 24 h incubation at 25°C, only inoculated fillets showed signs of lactic fermentation: presence of D-lactic acid and a high population of *L. sakei*. Thus, the original coupling of DIS with lactic fermentation by surface inoculation with *L. sakei* was validated. However, the heterogeneity of the meat and its endogenous flora as well as the complexity of the simultaneous mechanisms that take place during DIS and fermentation both justify the need for a more controlled experimental device. Model foods will be used in further research in order to better understand the simultaneous mechanisms that take place during the fermentation step of a DIS treated matrix.

Keywords: dehydration, salting, meat, *Lactobacillus sakei*