

Dehydration-impregnation by soaking combined with fermentation: an innovative alternative to traditional cured meat process

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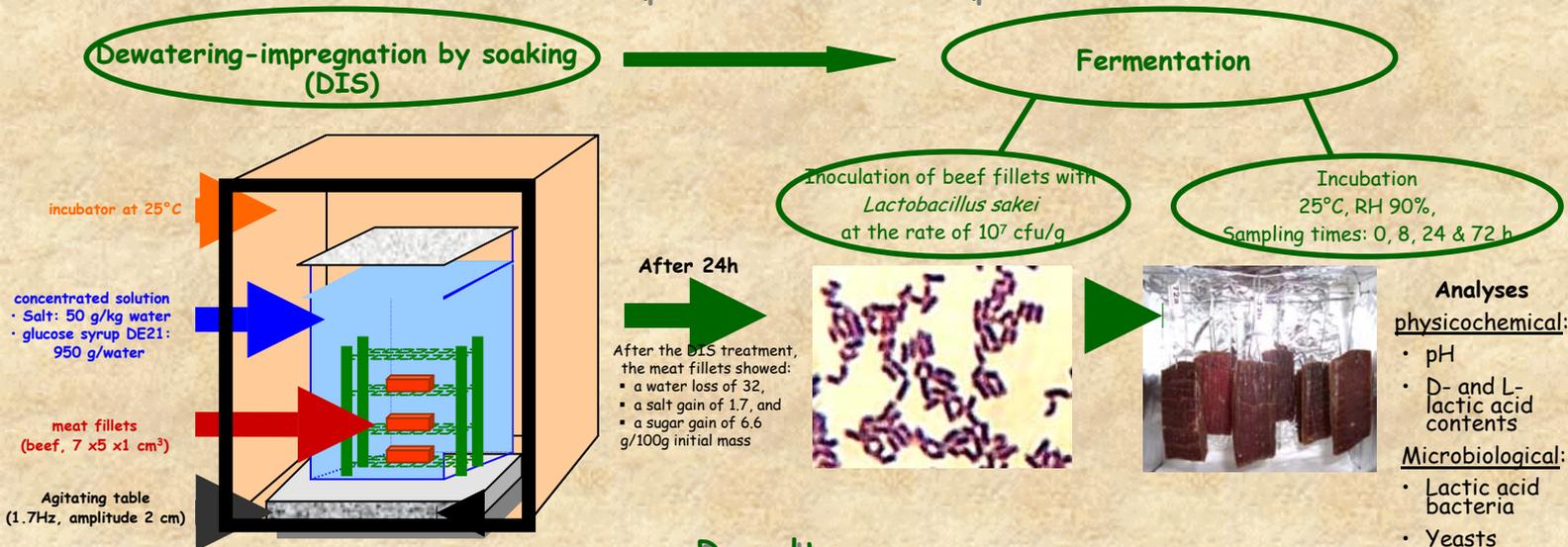
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Abstract

An innovative combined method is being proposed for the fermentation of meat. The new process consists of two successive operations: a first dehydration-impregnation by soaking treatment (DIS) (also known as osmotic treatment) to partially dehydrate and to impregnate the meat fillet with salt and sugars, followed by a controlled fermentation with added starter culture. This study was undertaken to evaluate the impact of meat formulation (i.e. removal of water and addition of salt and sugars) by DIS on the kinetics of fermentation.

Experimental set-up



Results

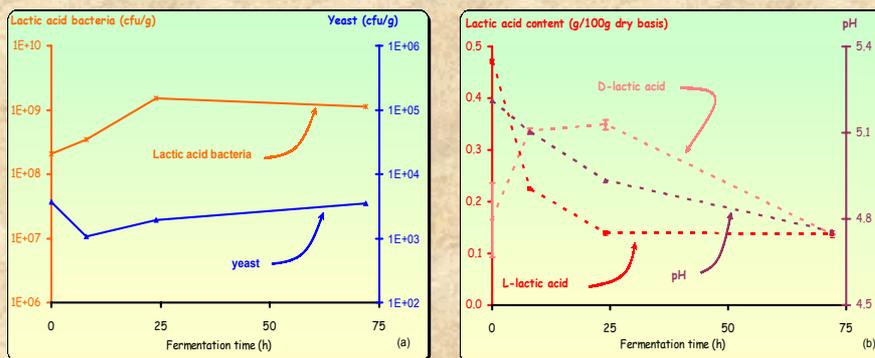


Fig. 1: Change in (a) microbial load, (b) meat pH, D- and L-lactic acid contents during fermentation of DIS-treated meat fillets

The combined treatment allowed satisfactory lactic acid fermentation of the meat, with a significant 1-log increase in the number of lactic acid bacteria (Fig.1a) accompanied by a decrease of 0.4 unit in the meat pH (Fig.1b) within a fermentation period of 72h.

An average of 0.35 g/100g (dry basis) of D-lactic acid was produced in the first 24 h of incubation, after which this amount decreased continuously to 0.14 g/100g (dry basis). Whereas L-lactic acid concentration, initially at 0.47 g/100g (dry basis), showed a continuous decrease throughout the incubation period to reach 0.14 g/100g (dry basis) at 72h. These observations suggest that both L- and D- lactic acids were utilised by microorganisms and/or other biochemical reactions during the incubation period.

Conclusion

This study clearly indicated that lactic acid fermentation occurred in a meat fillet that had been previously dehydrated and impregnated with salt and sugars by DIS treatment.

Further work will aim at identifying the best meat formulation by DIS that allows optimal fermentation kinetics, and at better understanding the underlying biochemical mechanisms.

Acknowledgements

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