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CONGRESS OF MICROBIOLOGY
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PORTO, PORTUGAL

BOOK OF ABSTRACTS



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P-220 - LACTOBACILLUS PLANTARUM SURVIVES DURING OSMOTIC DEHYDRATION AND STORAGE OF PROBIOTIC CUT APPLE

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Background

Osmotic dehydrated cut apple containing probiotics would be suitable for the growing market of fresh-cut fruits. The application of these intermediate moisture products into other products brings new possibilities to the food industry. The objective of the present study was to investigate if *Lactobacillus plantarum* 299v could be incorporated in apple cubes during osmotic dehydration (OD). In addition, the impact of sucrose and sorbitol as osmotic agents on the incorporation was also studied. The viability of *L. plantarum* in the apple cubes during storage was studied and the viability of the probiotic was also evaluated after a quick simulation of the digestion of probiotic apple cubes through the gastro-intestinal tract.

Method

The effects of 40 and 60 °Brix osmotic solutions of sucrose or sorbitol on the viability of *L. plantarum* 299v during the OD at 37 °C and 1013 or 150 mbar was evaluated; storage at 4 °C and a quick simulation (2 h) of the digestion of the osmotically dehydrated probiotic apple cubes through the gastro-intestinal tract were also performed and the viability of the probiotic was evaluated (Emser et al., 2017).

Results & Conclusions

Lactobacillus plantarum 299v (10^7 – 10^8 cfu/g) was successfully incorporated in apple cubes during the OD process (24 h) at 37 °C and normal atmosphere, as well as in vacuum, using 40 and 60 °Brix sucrose or sorbitol solutions. Osmotic solutions with lower soluble solids content seemed more adequate for the incorporation. Both sucrose and sorbitol proved to be suitable as osmotic agents.

Lactobacillus plantarum, incorporated in apple cubes, survived over a storage period of 6 days at 4 °C maintaining constant values of 10^7 cfu g⁻¹. In addition, the viability of *L. plantarum* did not decrease during a quick simulation of the passage of the apple cubes through the gastro-intestinal tract (2 h), which is essential for the beneficial effect of a probiotic.

References & Acknowledgments

Emser, K., Barbosa, J., Teixeira, P., & Morais, A.M.M.B. (2017) *Lactobacillus plantarum* survival during the osmotic dehydration and storage of probiotic cut apple. *Journal of Functional Foods*, 38, 519-528.

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Keywords: Osmotic dehydration, probiotic, *Lactobacillus plantarum*, sorbitol, prebiotic