

# **The potential probiotic *Lactobacillus rhamnosus* CTC1679 survives the passage through the gastrointestinal tract and its use as starter culture results in safe nutritionally enhanced fermented sausages**

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## **Abstract**

The human-derived potential probiotic strain *Lactobacillus rhamnosus* CTC1679 was used as a starter culture in reduced fat and sodium low-acid fermented sausages (*fuets*) to assess its ability to survive through the gastrointestinal tract (GIT) in a human intervention study consisting of 5 healthy volunteers who consumed 25 g *fuet* a day for 21 days. Faecal samples were analysed during and after consumption. *L. rhamnosus* CTC1679 produced a transient colonisation of the human GIT and persisted during the ingestion period of *fuet* containing *L. rhamnosus* CTC1679 at levels *ca.* 8 log CFU/g. After 3 days of non-consumption, the strain was still recovered in the faeces of all the volunteers.

To evaluate the safety of the nutritionally enhanced manufactured *fuets*, a challenge test was designed in a separately manufactured batch.

*L. rhamnosus* CTC1679 was able to grow, survive and dominate (levels *ca.* 10<sup>8</sup> CFU/g) the endogenous lactic acid bacteria (LAB), prevented the growth of *Listeria monocytogenes* throughout the whole ripening process of the *fuets* and eliminated *Salmonella*. After 35 days of storage at 4 °C, *L. monocytogenes* was not detected, achieving absence in 25 g of the product. The application of high hydrostatic pressure (HHP) treatment (600 MPa for 5 min) at the end of ripening (day 14) produced an immediate reduction of *L. monocytogenes* to levels < 1 log CFU/g. After 35 days of storage at 4 °C the pathogen was not detected.

Thus, the strain *L. rhamnosus* CTC1679 is a suitable starter culture for producing safe potentially probiotic fermented sausages.