

Morphological and functional characterization of *Carnobacterium maltaromaticum* isolated from vacuum-packed beef with long shelf life

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Temperatures near the freezing point of meat (−1.5 °C), associated with vacuum packaging, allows the preservation of this product up to several months, which makes possible the meat trade across the planet without resorting to freezing. Other the type of packaging and the storage temperature, the shelf-life of meat is directly related to its initial microbiological ecosystem and its evolution. *Carnobacterium maltaromaticum* is a lactic acid bacterium, and many lactic acid bacteria associated with meat are known for their bactericidal or bacteriostatic activity against other strains, species or genera of bacteria. In this way, the presence of certain lactic acid bacteria adapted to a low temperature in fresh meat could extend the shelf life and improve the microbial stability and safety of this product. The aim of this study was to perform a morphological and functional characterization of a *C. maltaromaticum* strain (lab. ref. CFAUS2/DLC/4/E1) with potential bioprotective effect isolated from commercial vacuum packaged long shelf life beef. The morphological, biochemical and enzymatic profiles, the influence of different temperatures and atmospheres, and the microbial stability of fresh beef inoculated with the *C. maltaromaticum* strain were evaluated. Morphological, biochemical and enzymatic profiles of the isolated *C. maltaromaticum* strain were similar to those of two reference strains (LMG 11393 and LMG 22902). The evaluation of the influence of different atmospheres showed that the growth of *C. maltaromaticum* was the slowest in an atmosphere containing 70 % O₂ and 30 % CO₂. Vacuum packaging is therefore more suitable for the growth of this bacterium. An antimicrobial effect against *Enterobacteriaceae* was highlighted on inoculated fresh meat. The functional characterization of this strain will be further pursued by genotypic characterization and its potential bioprotective effect will also be studied.