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Alginate beads to improve viability of *Lactobacillus plantarum* to heat stress

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The use of probiotics is largely encouraged due to health benefits that they promote. However, their application into food matrix generally is associated to significant losses in viability during processing and storage. Levels higher than 6 log CFU/g should be achieved in order to consider as a probiotic food. The encapsulation technique has been emerged as an alternative to protect probiotic against harsh environments. This work aimed to assess the viability of probiotic *Lactobacillus plantarum* ATCC 8014 as free or encapsulated form by extrusion during heat treatment at 70°C for 5, 10, 20 and 30 minutes. The wall material of capsules was composed by sodium alginate (1%), inulin (1%), milk powder (1%) and trehalose (5%). The beads had average size of 3.79 mm, pH value around 3.72 and encapsulation yield was of 94.48%. The viability of *L. plantarum* was performed using MRS agar and incubation at 37°C for 48 h under anaerobic conditions. Before heating the levels of *L. plantarum* was 10.23 and 9.67 log CFU/g in free and encapsulated forms, respectively. After heating for 5 min the levels were reduced significantly in free cell, achieved levels lower than 6 log CFU/g after 20 and 30 min of heating. Nevertheless, in encapsulated form, the loss of viability was lower and the level of *L. plantarum* in alginate beads was 7.37 log CFU/g after 30 min of heating. This system of encapsulation seems to be appropriate to protect *L. plantarum* to heat treatments.

Biography

Carlos Pasqualin Cavalheiro is a PhD candidate in Food Science and Technology at Universidade Federal de Santa Maria, Brazil. Actually he is a Visiting Researcher at Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN-CSIC), Madrid, Spain. He has experience in Food Microbiology and Meat Technology.

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