

Efficacy of using gelatin for microencapsulation of lactic acid bacteria and its impact on the functional properties.

Anil Pandey, Neelam Yadav, Riya Tyagi
University of Allahabad, Prayagraj

The current research elucidates the application of optimized coating matrix for microencapsulation of lactic acid bacteria isolated from traditional dairy foods. The optimization of matrix was carried through RSM using sodium alginate, gelatin and starch for enhancing the storage stability of lactic acid bacteria. The developed microcapsules were freeze dried at -40°C ; 0.1 milibar pressuer and stored in ambient conditions. The functional properties of lactic acid bacteria was evaluated based on survivalbility in simulated gastric juice and simulated intestinal juice, antimicrobial activity, auto aggregation activity, cholesterol reduction activity, antioxidant activity and cell surface hydrophobicity. The results were compared with plain sodium alginate matrix prepared under similar conditions. Gelatin due to its explicit gel forming thermos-reversible property and amphoteric nature also has low rigidity which needs cross linking. Starch used provides structural stability during gelatinization. The results showed that gelatin alongwith the combination of sodium alginate and starch provides better functional properties than plain sodium alginate matrix. There was almost a reduction of 0.8 log cfu/ml as observed in simulated gastric and intestinal juice through the microcapsules prepared by optimization of sodium alginate matrix using gelatin while through plain sodium alginate matrix the viable loss was around 1.5 log cfu/ml. The antimicrobial activity of lactic acid bacteria was also found having higher zone of inhibition through the microcapsules prepared by gelatin than the plain sodium alginate matrix. The antioxidant activity and autoaggregation activity of isolated lactic acid bacteria was found marginally better when encapsulated in gelatin matrix. The results showed the efficacy of using gelatin as a possible encapsulating agent for microencapsulation.

A Better Way to anilp7794@gmail.com