

Optimization for cell entrapment of bifidobacteria

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Abstract

In this study, it was attempted to increase the survival rate of bifidobacteria entrapped in alginate in the gastrointestinal tract. The search of entrapment materials for bifidobacterial survivability was determined after exposure to simulated gastric juices. In the 2.5% alginate beads, the survival rate of bifidobacteria was marked be higher than other concentrations and alginate. The protective effect of 9 different food additives with 2.5% alginate beads for bifidobacterial survivability was determined after exposure to simulated gastric juices. In the erythritol-alginate beads, the survival rate of bifidobacteria was proved to be higher than different kinds food additives. The survival rate of bifidobacteria entrapped in beads containing 1.0% erythritol showed the highest viability after exposure to simulated gastric juices for 3h, thereby was indicated that 1.0% erythritol is the optimum concentration for 2.5% alginate bead preparation. The effect as various sizes of erythritol-alginate beads was determined after exposure to simulated gastric juices. In the erythritol-alginate beads made from 24G needle, the survival rate of bifidobacteria was proved to be higher than other sizes. erythritol-alginate besds were found to be more efficient for survivability than untrapped cells and alginate bead in gastrointestinal tract and storage period. Consequently, the survival rate of bifidobacteria entrapped in erythritol-alginate beads was increased in simulated gastric juices and bile salts. It can be that erythritol-alginate bead is capable for high value probiotic products.

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