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## Enhanced survival of spray-dried microencapsulated *Lactobacillus rhamnosus* GG in the presence of maltodextrin and fructooligosaccharide as wall material

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### Abstract

The survival of spray dried *Lactobacillus rhamnosus* GG (LGG) preparations encapsulated in maltodextrin (MD) - fructooligosaccharide (FOS) was examined. The feed solution composed of probiotic bacteria and various combinations of wall material such as MD : FOS (20:0; 20:2.5; 20:5). The spray drying inlet and outlet temperature was maintained as 170±5 °C and 75±5 °C respectively. After spray-drying small microparticles were recovered and further characterization was done. Physicochemical properties (moisture content, water activity and colour), and viability (CFU/gm and survivability of cells in simulated gastrointestinal digestion) were examined. The results showed that MD : FOS (20:2.5% (w/v)) produced the best results. The final product had acceptable moisture content (3.50%) and water activity (0.30). The  $l^*$ ,  $a^*$  and  $b^*$  values were 97.94, -0.34 and 2.716 respectively. The final microencapsulated probiotic powder was having  $10^9$  CFU/gm. Thus, the spray drying using above combination as drying agent produce probiotic powder with high viability levels after drying and with good physicochemical parameters.

**Practical significance:** The incorporation of FOS into the encapsulant formulation prior to spray drying improves the survival of LGG during simulated gastrointestinal digestion.

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