

The Survival of *Bifidobacterium longum* in Frozen Yoghurt Ice Cream and Its Properties Affected by Prebiotics (Galacto-Oligosaccharides and Fructo-Oligosaccharides) and Fat Content

Authors : S. Thaiudom, W. Toommuangpak

Abstract : Yoghurt ice cream (YIC) containing prebiotics and probiotics seems to be much more recognized among consumers who concern for their health. Not only can it be a benefit on consumers' health but also its taste and freshness provide people easily accept. However, the survival of such probiotic especially *Bifidobacterium longum*, found in human gastrointestinal tract and to be benefit to human gut, was still needed to study in the severe condition as whipping and freezing in ice cream process. Low and full-fat yoghurt ice cream containing 2 and 10% (w/w) fat content (LYIC and FYIC), respectively was produced by mixing 20% yoghurt containing *B. longum* into milk ice cream mix. Fructo-oligosaccharides (FOS) or galacto-oligosaccharides (GOS) at 0, 1, and 2% (w/w) were separately used as prebiotic in order to improve the survival of *B. longum*. Survival of this bacteria as a function of ice cream storage time and ice cream properties were investigated. The results showed that prebiotic; especially FOS could improve viable count of *B. longum*. The more concentration of prebiotic used, the more is the survival of *B. Longum*. These prebiotics could prolong the survival of *B. longum* up to 60 days, and the amount of survival number was still in the recommended level (106 cfu per gram). Fat content and prebiotic did not significantly affect the total acidity and the overrun of all samples, but an increase of fat content significantly increased the fat particle size which might be because of partial coalescence found in FYIC rather than in LYIC. However, addition of GOS or FOS could reduce the fat particle size, especially in FYIC. GOS seemed to reduce the hardness of YIC rather than FOS. High fat content (10% fat) significantly influenced on lowering the melting rate of YIC better than 2% fat content due to the 3-dimension networks of fat partial coalescence theoretically occurring more in FYIC than in LYIC. However, FOS seemed to retard the melting rate of ice cream better than GOS. In conclusion, GOS and FOS in YIC with different fat content can enhance the survival of *B. longum* and affect physical and chemical properties of such yoghurt ice cream.

Keywords : *Bifidobacterium longum*, prebiotic, survival, yoghurt ice cream

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