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Is ice cream a suitable carrier for probiotics?

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The objective of this study was to investigate the suitability of ice cream (IC) as a carrier for probiotics.

A DBRPC parallel study was performed with healthy 25–55 year old volunteers divided into three groups of 30. During 4 weeks, each group consumed either: (1) a daily IC control product, (2) IC with 1×10^9 cfu of *Bifidobacterium lactis* HN019 every day, or (3) IC with 5×10^9 cfu of *B. lactis* Bb-12 every other day alternating with control IC. Effects on the intestinal microflora and on phagocytosis, natural killer (NK) cell activity and faecal IgA were investigated.

During the four intervention weeks, the product stability of *B. lactis* Bb-12 was similar under laboratory controlled and home storage conditions, but loss of probiotic viability was 2–3-fold higher for *B. lactis* HN019 under home storage conditions.

Consumption of IC with *B. lactis* Bb-12 every other day resulted in the presence of a significant number of *B. lactis* in the faeces of study subjects compared to controls ($P = 0.0003$), whereas every day consumption of IC with *B. lactis* HN019 did not increase numbers of the strain in faeces compared to control subjects ($P = 0.58$). Sixty percent of subjects consuming the *B. lactis Bb-12* product had the probiotic in their faeces. This is well within the range described for other product formats. In contrast, only 13% of HN019 consumers had detectable *B. lactis* in their faeces, whereas 10% of controls showed *B. lactis* positivity, which is similar to what has been described in the literature.

No shifts were detected in selected genera of the faecal microflora. Besides a very small but significant decrease in NK cell activity after consumption of either test product ($P<0.04$), no changes in immune markers were observed. The lack of beneficial effects on immune markers can be attributed to the fairly healthy study population and the fact that bifidobacteria are currently more and more positioned around gut and digestive health instead of immune health.

It was concluded that IC can be a suitable carrier for some, but not for all probiotics. *B. lactis Bb-12* is compatible with IC delivering detectable amounts of live probiotics through the consumers intestine even in an every-other day consumption pattern.