

Bifidogenic effects of feeding infant formula containing galacto-oligosaccharides in healthy formula-fed infants

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Background - Human milk oligosaccharides are readily fermented in the infant colon where they selectively stimulate the growth of bifidobacteria. Bifidobacteria lower intestinal pH through the production of acetic and lactic acids which may suppress the growth of pathogenic bacteria.

Objective - To investigate the bifidogenic effects of a galacto-oligosaccharide (GOS) supplemented infant formula on the composition of the faecal microflora in formula-fed infants.

Design - Healthy full-term formula-fed infants were randomly assigned to receive standard infant formula supplemented with 0.7% GOS (n = 13) or the same formula supplemented with lactose as a control (n = 13) during a 21 day feeding trial. Twenty four breast-fed infants were also studied as a reference group. Faecal samples were collected on day 1, day 11 and day 21 and analysed for bacterial counts, pH and lactate concentrations.

Outcomes - GOS supplementation increased bifidobacteria counts 10-fold (P = 0.001) to the range of the reference group of breast-fed infants. The faecal pH after 21 days of feeding was significantly lower in the GOS formula group than in the control group (P = 0.004). Faecal lactate concentrations increased 4-fold in the GOS formula group from 1.5 ± 0.5 mmol/L on day 1 to 5.9 ± 1.4 mmol/L on day 21, but this increase was only marginally significant (P = 0.09).

Conclusions - This study showed that supplementation of infant formula with GOS stimulates the growth of bifidobacteria in the colon and results in lower fecal pH and increased fecal lactate concentrations.