

Background: Human milk oligosaccharides have been shown to stimulate selectively the growth of Bifidobacteria and Lactobacilli in the intestine. In this study, the bifidogenic effect of an experimental prebiotic oligosaccharide mixture consisting of low-molecular-weight galactooligosaccharides and high-molecular-weight fructooligosaccharides was analyzed in 90 term infants. **Methods:** Two test formulas were supplemented with either 0.4 g/dL or with 0.8 g/dL oligosaccharides. In the control formula, maltodextrin was used as placebo. At study day 1 and study day 28, the fecal species, colony forming units (cfu) and pH were measured and stool characteristics, growth, and side effects were recorded. **Results:** At study day 1 the median number of Bifidobacteria did not differ among the groups (0.4 g/dL group, mean [inter-quartile range] 8.5 [1.9] cfu/g; 0.8 g/dL group, 7.7 [6.1] cfu/g; and the placebo group, 8.8 [6.1] cfu/g) (figures in square brackets are inter-quartile range). At the end of the 28-day feeding period, the number of Bifidobacteria was significantly increased for both groups receiving supplemented formulas (the 0.4 g/dL group, 9.3 [4.9] cfu/g; the 0.8 g/dL group, 9.7 [0.8] cfu/g) versus the placebo group (7.2 [4.9] cfu/g, $P < 0.001$). This effect was dose dependent (0.4 g/dL versus 0.8 g/dL, $P < 0.01$). The number of Lactobacilli also increased significantly in both groups fed the supplemented formulas (versus placebo, $P < 0.001$), but there was no statistically significant difference between the group fed formula with 0.4 g/dL oligosaccharides and the group fed formula with 0.8 g/dL oligosaccharides. The dosage of supplement significantly influenced the change in fecal pH ($P < 0.05$) (placebo, pH 5.5-6.1; 0.4 g/dL formula, pH 5.48-5.44; 0.8 g/dL formula, pH 5.54-5.19). Slight changes in the stool frequency resulted in a significant difference between the placebo group and the group fed the 0.8 g/dL formula at day 28 ($P < 0.01$). Supplementation had a significant dose dependent influence on stool consistency (0.8 g/dL versus placebo, $P < 0.0001$; 0.8g/dL versus 0.4 g/dL, $P < 0.01$). Supplementation had no influence on the incidence of side effects (crying, regurgitation, vomiting) or growth. **Conclusions:** These data indicate that supplementation of a term infant's formula with a mixture of galacto- and fructooligosaccharides has a dose-dependent stimulating effect on the growth of Bifidobacteria and Lactobacilli in the intestine and results in softer stool with increasing dosage of supplementation.