

1. Effects of feeding probiotics during weaning on infections and antibody responses to diphtheria, tetanus and Hib vaccines.

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Microbial exposure is necessary for the development of normal immune function, which has driven the idea of using probiotics for treatment and prevention of immune-mediated diseases in infancy and childhood. Mounting evidence indicates that probiotics have immunomodulatory effects. However, the mechanisms are still poorly understood. Specific antibody response is a valuable proxy for immune system maturation status in infancy. We aimed at determining the impact of *Lactobacillus* F19 (LF19) during weaning on infections and IgG antibody responses to routine vaccines. In a double-blind, placebo-controlled randomized intervention trial, infants were fed cereals with (n = 89) or without LF19 (n = 90) from 4 to 13 months of age. Infants were immunized with DTaP (diphtheria and tetanus toxoid and acellular pertussis), polio and Hib-conjugate vaccines at (3), 5(1/2) and 12 months of age. We assessed the number of days with infections, antibiotic prescriptions and antibody concentrations to Hib capsular polysaccharide (HibPS), diphtheria toxin (D) and tetanus toxoid (T) before and after the second and third doses. Days with infectious symptoms did not differ between the groups. Days with antibiotic prescriptions were fewer in the LF19 group (p = 0.044). LF19 enhanced anti-D concentrations when adjusting for breastfeeding duration and colonization with LF19 (p = 0.024). There was an interaction of the intervention and colonization with LF19 on anti-T concentrations during the course of vaccination (p = 0.035). The anti-HibPS concentrations were higher after the first and second dose of Hib vaccine in infants breastfed <6 months compared with those breastfed > or =6 months (p < 0.05), with no effect by LF19. In conclusion, feeding LF19 did not prevent infections, but increased the capacity to raise immune responses to protein antigens, with more pronounced effects in infants breastfed <6 months.