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A specific mixture of short-chain galacto-oligosaccharides and long-chain fructo-oligosaccharides induced an anti-allergic Ig profile in infants at risk for allergy

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In a prospective study in infants with a family history of atopy a specific prebiotic oligosaccharide mixture (90% short-chain galacto-oligosaccharides and 10% long-chain fructo-oligosaccharides (GOS/FOS; IMMUNOFORTIS) reduced the cumulative incidence of atopic dermatitis at 6 months of age⁽¹⁾. In a subgroup of these infants (*n* 84) it was possible to obtain a blood sample at 6 months of age to analyse the potential effect of these dietary oligosaccharides on the Ig profile.

In this prospective double-blind randomized placebo-controlled study the infants received a hypoallergenic formula with either 8 g GOS/FOS/l or 8 g/ maltodextrin (placebo)/l for 6 months. At 3 months of age children were vaccinated against diphtheria, tetanus and polio (DTP). At 6 months of age total plasma levels of IgE, IgG1, IgG2, IgG3 and IgG4 as well as cow's-milk protein (CMP)- and DTP-specific Ig were measured by ELISA.

Supplementation with GOS/FOS led to a significant reduction in plasma levels of total IgE (*P*=0.007), IgG2 (*P*=0.029) and IgG3 (*P*=0.0343) whereas no significant effect on IgG4 was observed. The plasma levels of CMP-specific IgG1 was significantly decreased (*P*=0.015) in the GOS/FOS group. The levels of CMP-specific IgE were very low and no effect of GOS/FOS supplementation was observed. CMP-specific IgG4 was not detectable in the samples. No effect of GOS/FOS supplementation on any vaccine-specific antibody isotype levels was found.

Evidently, GOS/FOS supplementation induced an anti-allergic Ig profile in infants at high risk for allergic diseases while the desired specific immune responses were unaffected, indicating the potential role of oral GOS/FOS exposure for primary prevention of allergies.

	Placebo (median)	GOS/FOS (median)	<i>P</i>
Total IgE (kU/ml)	10.0	4.00	0.008
Total IgG1 (g/L)	3.09	2.26	0.005
Total IgG4 (µg/L)	187.7	427.2	0.728
CMP IgE (ng/ml)	2.50	1.80	0.348
CMP IgG1 (AU/ml)	3.40	1.00	0.015
DTP IgE (AU/ml)	0.40	0.37	0.884
DTP IgG1 (AU/ml)	441.3	329.6	0.748

1. Moro G, Arslanoglu S, Stahl B, Jelinek J, Wahn U & Boehm G (2006) *Arch Dis Child* **91**, 814–819.