doi: 10.1111/cea.12154

Clinical & Experimental Allergy, 43, 1048–1057

ORIGINAL ARTICLE Epidemiology of Allergic Disease

Early supplementation with *Lactobacillus rhamnosus* HN001 reduces eczema prevalence to 6 years: does it also reduce atopic sensitization?

K. Wickens[1], T. V. Stanley[2], E. A. Mitchell[3], C. Barthow[1], P. Fitzharris[4], G. Purdie[5], R. Siebers[1], P. N. Black[6]* and J. Crane[1]

[1]Wellington Asthma Research Group, Wellington School of Medicine and Health Sciences, University of Otago, Wellington, New Zealand, [2]Department of Paediatrics, Wellington School of Medicine and Health Sciences, University of Otago, Wellington, New Zealand, [3]Department of Paediatrics, University of Auckland, Auckland, New Zealand, [4]Immunology Department, Auckland Hospital, Auckland, New Zealand, [5]Dean's Department, Wellington School of Medicine and Health Sciences, University of Otago, Wellington, New Zealand and [6]Department of Pharmacology & Clinical Pharmacology, University of Auckland, Auckland, New Zealand

Clinical & Experimental Allergy

Summary

Background The role of probiotics in prevention of allergic disease is still not clear; efficacy may depend on the timing, dose, duration, and specific probiotic used. Using a double-blind randomized placebo-controlled trial (Australian New Zealand Clinical Trials Registry: ACTRN12607000518460), we have shown that in a high-risk birth cohort, maternal supplementation from 35 weeks gestation until 6 months if breastfeeding and infant supplementation from birth until 2 years with *Lactobacillus rhamnosus* HN001 (HN001) (6×10^9 cfu/day) halved the cumulative prevalence of eczema at 2 and 4 years. *Bifidobacterium animalis* subsp *lactis* HN019 (HN019) (9×10^9 cfu/day) had no significant effect.

Objective To determine whether differences in effects of HN001 and HN019 on eczema persist to age 6 years, and to investigate effects on sensitization.

Methods Standard procedures were used to assess eczema (The UK Working Party's Criteria), eczema severity (SCORAD), atopic sensitization [skin prick tests (SPT), total and specific IgE] and standard questions used for asthma, wheeze, and rhinoconjunctivitis.

Results HN001 was associated with significantly lower cumulative prevalence of eczema (HR = 0.56, 95% CI 0.39–0.80), SCORAD ≥ 10 (HR = 0.69, 0.49–0.98) and SPT sensitization (HR = 0.69, 95% CI 0.48–0.99). The point prevalence of eczema (RR = 0.66, 95% CI 0.44–1.00), SCORAD ≥ 10 (RR = 0.62, 95% CI 0.38–1.01) and SPT sensitization (RR = 0.72, 95% CI 0.53–1.00) were also reduced among children taking HN001. HN019 had no significant effect on any outcome.

Conclusion and Clinical Relevance This study provides evidence for the efficacy of the probiotic *L. rhamnosus* HN001 in preventing the development of eczema and possibly also atopic sensitization in high risk infants to age 6 years. The absence of a similar effect for HN019 indicates that benefits may be species specific.

Keywords asthma, atopic sensitization, *Bifidobacterium animalis* subsp *lactis* HN019, eczema, *Lactobacillus rhamnosus* HN001, paediatrics, probiotics, randomized controlled trial, rhinoconjunctivitis, wheeze

Submitted 21 January 2013; revised 25 April 2013; accepted 2 June 2013

Correspondence:
Dr Kristin Wickens, Wellington Asthma Research Group, Wellington School of Medicine and Health Sciences, University of Otago, P O Box 7343, Wellington South, Wellington, New Zealand.
E-mail: kristin.wickens@otago.ac.nz

Cite this as: K. Wickens, T. V. Stanley, E. A. Mitchell, C. Barthow, P. Fitzharris, G. Purdie, R. Siebers, P. N. Black and J. Crane, *Clinical & Experimental Allergy*, 2013 (43) 1048–1057.