



HOWARU® PROTECT EARLYLIFE

The safe and effective way to support the development of immune health in infants

Your daily challenge

Helping mothers support their babies' immune health and their own

Tailor-made products for expecting mothers

Supporting your products with clinically-documented probiotics

Safe probiotics for your products

A top quality, clinically-studied probiotic to address developing infant microflora and immune system function

During pregnancy, a mother's health is crucial for the development of the child. Healthy maternal nutrition has been shown to have a positive influence on an infant's microbiota and immune health, while balanced development of the immune system is associated with life-long health.

Infant gastrointestinal microflora develops quickly after birth and is linked to development of the immune system. The first exposure for an infant takes place via the mother, who becomes a primary source of bacterial species found in the developing gut microbiota of the infant. Infant nutrition (breast feeding or formula feeding) provides further support for an infant's microbiota growth which continues to develop until 3 years of age. During this period, development of infant microbiota helps drive the maturation of the immune system. The disruption of the development of the microbiota and immunity during this critical period has been linked with the development of allergies and eczema. The prevalence of eczema and allergies are increasing world-wide.



Early life, protected

Demand is growing for safe products with proven efficacy to support the immune health of infants. As part of the DuPont™ Danisco® premium ingredient range, HOWARU® Protect EarlyLife contains the probiotic strain *Lactobacillus rhamnosus* HN001™ and is designed specifically for pregnant women and children (0 to 2 years)*. It is proven to safely support the development of immune health in infants and children.

* Probiotic Patent family: WO99010476

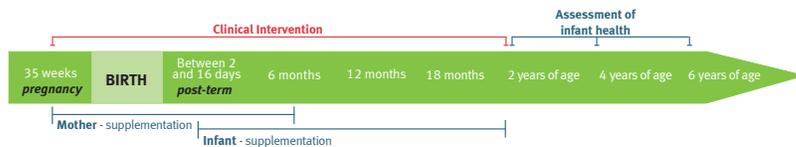
HOWARU® Protect EarlyLife – critical immune system support

A double-blind randomized placebo controlled clinical study was designed to test the efficacy of *L. rhamnosus* HN001™ on the prevalence of eczema and allergic sensitization. In total, 316 mothers and their infants were divided into placebo and HN001™ groups. Pregnant mothers were supplemented daily from 5 weeks pre-term to 6 months post-term if breastfeeding. Infants were supplemented daily from birth until 2 years old. The probiotic was administered in capsules to mothers and as powder, powder diluted in milk, or sprinkled on top of the food to infants.

At the age-points of 2, 4 and 6 years the prevalence of eczema and allergic sensitization were determined by using clinical diagnosis and skin prick tests respectively (Wickens et al. 2008; Wickens et al. 2012; Wickens et al. 2013).

Addressing an area of concern for caregivers and children

At the age of two years, the results demonstrated a significant reduction in the cumulative prevalence of eczema in the group supplemented with *L. rhamnosus* HN001™. By using clinical diagnosis criteria, the prevalence of eczema was 49% lower than the placebo group at 2 years of age. At 6 years of age the benefits were still present, when the cumulative prevalence of eczema was 44% lower in the group supplemented with HN001™ versus the placebo group. At the 6-year follow-up study it was found that the group supplemented with *L. rhamnosus* HN001™ showed a significant decrease in the cumulative prevalence of positive skin-prick tests by 31%. Furthermore, at 4 years of age the relative risk of rhinoconjunctivitis (rhinitis and red eyes) was found to be 62% less in the probiotic group.

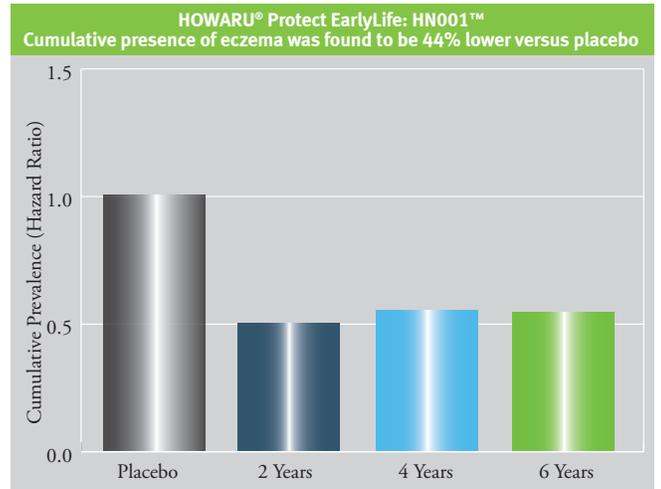


Clinical Trial supplementation plan for mothers and infants.

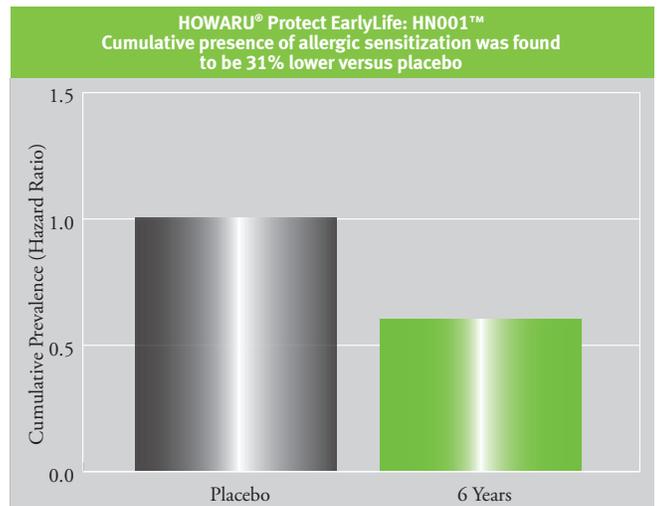
Adapted from Wickens et al. 2013

Why choose HOWARU® Protect EarlyLife?

- A documented probiotic to support the development of immune health in infants. Benefits delivered at 6 billion CFU of *Lactobacillus rhamnosus* HN001™
- Significant effect observed during first 2 years of life, a prolonged effect over 6 years and a unique long-term benefit promoting balanced immune health
- Proven as safe and well tolerated by mothers and infants
- Proprietary stabilization techniques ensure that EarlyLife is in prime condition throughout shelf-life
- A range of convenient ready-to-market formats and concentrate available for the infant nutrition, consumer health care, dietary supplements, and food and beverage industries, or as a custom formulation suited to your desired delivery format
- Strain is registered in China for incorporation into Pediatric Formula



Adapted from Wickens et al. 2013



Adapted from Wickens et al. 2013

Why choose DuPont?

- Leaders in Probiotic science
- Broadest range of clinically-documented probiotics
- Unrivaled dietary supplement formulation expertise
- Global and regional applications expertise used widely by the food & beverage industries
- Robust regulatory support to help you comply with local requirements
- Marketing support and industry insights to help you successfully position your products

References

- Wickens K, Stanley TV, Mitchell EA, Barthow C, Fitzharris P, Purdie G, Siebers R, Black PN, Crane J. Early supplementation with *Lactobacillus rhamnosus* HN001 reduces eczema prevalence to 6 years: does it also reduce atopic sensitization? *Clin Exp Allergy*. 2013 Sep;43(9): 1048-57. HN019 had no significant effect, results not shown.
- Wickens K, Black P, Stanley TV, Mitchell E, Barthow C, Fitzharris P, Purdie G and Crane J. 2012. A protective effect of *Lactobacillus rhamnosus* HN001 against eczema in the first 2 years of life persists to age 4 years. *Clin Exp Allergy*. 42: 1071-1079.
- Dekker JW, Wickens K, Black PN, Stanley TV, Mitchell EA, Fitzharris P, Tannock GW, Purdie G, Crane J. 2009. Safety aspects of probiotic bacterial strains *Lactobacillus rhamnosus* HN001 and *Bifidobacterium animalis* subsp. *lactis* HN019 in human infants aged 0-2 years. *Int Dairy J*. 19: 149-154.
- Wickens K, Black PN, Stanley TV, Mitchell E, Fitzharris P, Tannock GW, Purdie G, Crane J; Probiotic Study Group. 2008. A differential effect of 2 probiotics in the prevention of eczema and atopy: A double-blind, randomized, placebo controlled trial. *J Allergy Clin Immunol*. 122: 788-94.

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