



Probiotics+ **Pregnancy & Baby**

The widest range of benefits



Probiotics+ Pregnancy & Baby

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Health during Pregnancy and Infancy

The foetal and neonatal (newborn) periods are critical to the development of the immune system and many other biological systems. As the foetus and baby grow, a huge level of adaptation takes place and much of this structural and physiological development is now known to remain with us into adulthood. These changes are driven in part by environmental stimuli, including microbes, and the gut microbiota is compulsory for the development of the immune system.

The in utero (womb) environment requires the baby's immune system to be subdued to tolerate toxins and other challenges experienced from the mother's body and the changes and stress involved in growth and development. After birth, there is a sudden enormous exposure to environmental toxins and the baby's immune system must adapt quickly to produce immune responses.

The first bacterial colonisation of the gut also occurs at this time, although there is some evidence to suggest that there are low numbers of foetal and placental microbiota prior to birth, thought to be part of the preparation of the baby's immune system for the outside world.

The newborn gut is a perfect microbial habitat as it contains food, moisture and warmth, which help the microbes to colonise and start to grow, and the first 1,000 days of life are known to be significant in shaping the microbiome to support health throughout life and help to prevent chronic diseases later in life (particularly during adolescence and early adulthood).

Microbiologists Dr. Nigel Plummer and Dr. Sue Plummer established Cultech Ltd in 1994 with the vision for a company with research at its heart.



- One of the largest clinical trials demonstrating the benefits of probiotics for allergy prevention
- A study with 454 mother-baby pairs demonstrating the safe use and beneficial impact of Lab4B Probiotics on the development of atopic eczema and atopic sensitisation in babies



What Impacts Early Microbiome Development?

Research has shown a significant difference between the microbiome of vaginally delivered and Caesarean-section (C-section) infants. Babies delivered vaginally receive their first colonisation of bacteria from the vaginal, skin and rectal bacteria of their mother, while C-section babies acquire bacteria similar to those found on the skin surface and hospital environment.

As the infant grows, the diversity of the bacteria in the microbiome increases to drive the development of the immune system and to ensure that the bacteria is recognised by the baby's immune system as 'self'.

As well as mode of birth, several factors have been shown to influence the development of a baby's microbiome, including breastfeeding and antibiotic exposure.

Towards the end of pregnancy, intestinal bacteria (the 'mammary microbiota') are transferred to the mother's breast tissue in preparation for breast milk production and breast milk has been shown to contain bacteria present in the gut microbiota of breastfed infants.

Giving antibiotics during the first year of life (even briefly) has been shown to alter the constitution of the infant microbiota by depleting the bacterial diversity and its ability to colonise the gut. This change to the development of the microbiota may have long-term implications for health, as a higher level of beneficial bacteria is associated with lower levels of atopic disease and obesity in children and adults.

The Role of Probiotics during Pregnancy and Infancy

Probiotics in general are considered safe to take during pregnancy and infancy and have been shown to support the development of the infant gut microbiome and specifically to help reduce the incidence of allergy, to offset the impact of excessive hygiene practices (the 'hygiene hypothesis') and to help prevent the 'atopic march' where babies who develop eczema are more likely to go on to develop other atopic allergies, including rhinitis and asthma. They may be particularly useful in instances where antibiotics have been required.

Studies

The Evidence for Lab4B Effectiveness in Pregnancy & Babies

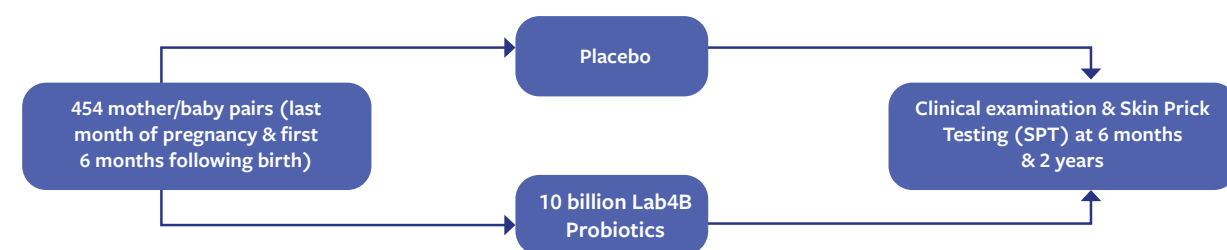
Lab4B Probiotics has shown the following benefits:

- Safe for use in pregnancy and in newborns
- Prevention of atopic eczema
- Prevention of atopic sensitization
- Anti-constipation effect
- Support for the healthy development of infants' gut microbiota



The Swansea Baby Study

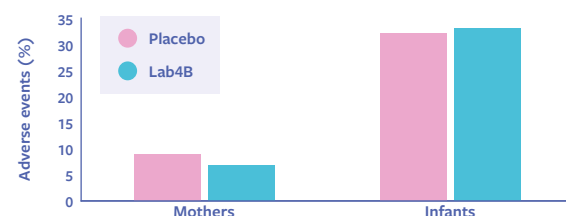
This randomised, double-blind, placebo-controlled study was designed in conjunction with the College of Medicine at Swansea University, to evaluate whether Lab4B Probiotics given during infancy could prevent allergy in children.



Results

Safety

Safety Assessment



- Supplementation with 10 billion CFU of Lab4B Probiotics was not associated with adverse events in mothers or their infants.
- No Lactobacilli or Bifidobacteria infections were identified.

Bowel Habit

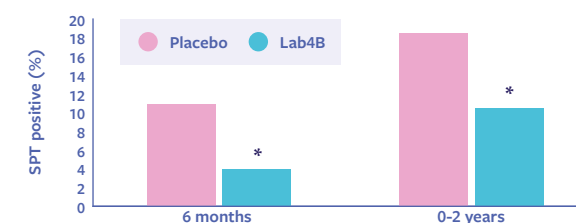
Constipation



- There was a significant reduction in constipation in the babies taking Lab4B Probiotics compared to the placebo group (* $P=0.01$).

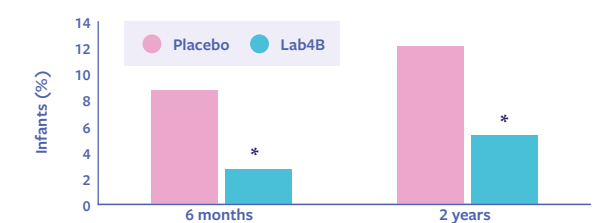
Allergy Prevention

Atopic Sensitisation



- The babies given Lab4B Probiotics were 44% less likely to develop allergic reaction to common allergens, including grass pollen, cow's milk, hen's egg, house dust mite and cat dander (* $P<0.05$).

Atopic Eczema



- The babies given Lab4B Probiotics were 56% less likely to develop atopic eczema by 2 years of age than those given a placebo (* $P<0.05$).

Gut Microbiota

Supplementation with Lab4B Probiotics had a beneficial impact on the development of the infants' gut microbiome during the first 6 months of life:

- Increased abundance of beneficial bacteria (*Bifidobacteriaceae*, *Lactobacillaceae*)
- Accelerated gut microbiota diversification
- Reduced levels of beta-lactam and cephalosporin resistance genes
- Influenced metabolic functions in the gut

Conclusion

Lab4B Probiotics are safe to use during pregnancy and early infancy.

The primary author from Swansea University & Liverpool School of Tropical Medicine, Prof. Stephen Allen, concluded that 'Lactobacilli and Bifidobacteria administered to pregnant women and infants aged 0-6 months prevented atopic sensitisation and atopic eczema'.



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A multitude of benefits

- Lab4 Probiotics has shown simultaneous benefits on digestive health, immune function, athletic performance, gut-brain axis, and alongside antibiotic use
- Lab4B Probiotics has been shown to be safe during pregnancy and for newborn infants and to have specific immune benefits for babies
- The Lab4 consortia are adapted to the human gut with demonstrable ability to survive stomach acidity and bile acids and to colonise epithelial tissue and mucous
- Shelf-life up to 24 months in ambient conditions*

Why Lab4 Blends Work

One body system

The gut and hence the microbiome are extensively connected to almost all of the other physiological systems of the body, this includes the immune system, endocrine system, brain and central nervous system, and metabolic physiology.

Proxies for microbes

Consequently, as proxies for our microbiome, effective probiotics could also impact beneficially on these distant physiologies – and these benefits may be manifest simultaneously as the intestinal health benefits outlined above.

Bacterial colonisation

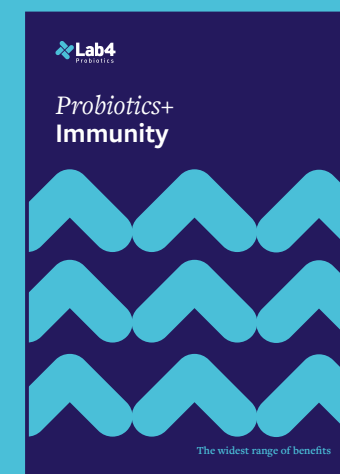
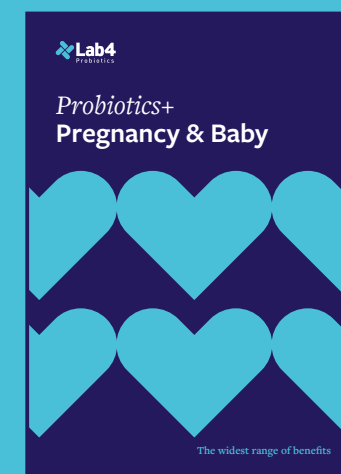
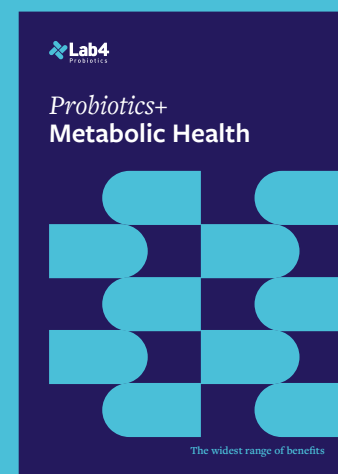
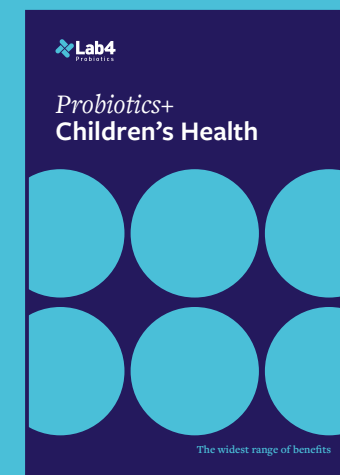
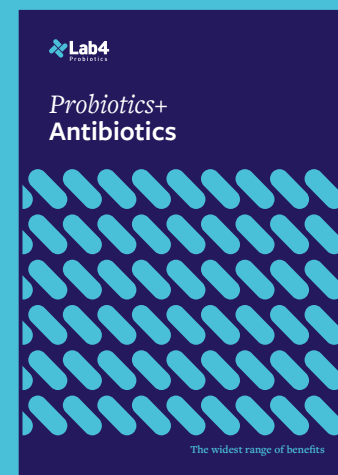
Lab4 contains *Lactobacillus acidophilus* (two strains) as well as *Bifidobacterium animalis* subsp. *lactis* and *Bifidobacterium bifidum*. The Lactobacilli are dominant colonisers of the sparsely populated small intestine and the Bifidobacteria constitute a significant population in the distal small intestine and are also present throughout the large intestine.

High dose

Over the past 30 years it has become evident that higher doses of effective probiotic strains produce faster, greater and more consistent effects and benefits. In all clinical studies on adults performed to date, Lab4 has been supplemented at 25 billion a day. This is why we have seen a broad range of consistent health benefits across a wide range of conditions and particularly with intestinal health.

*In powder and capsule products produced and packed appropriately

See our other Guides



Lab4 Specification

Lab4 Probiotic blends are available as freeze-dried concentrated powders at various concentrations. Please contact us for more details at info@lab4probiotics.co.uk or on 01639 825100 www.lab4probiotics.co.uk

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