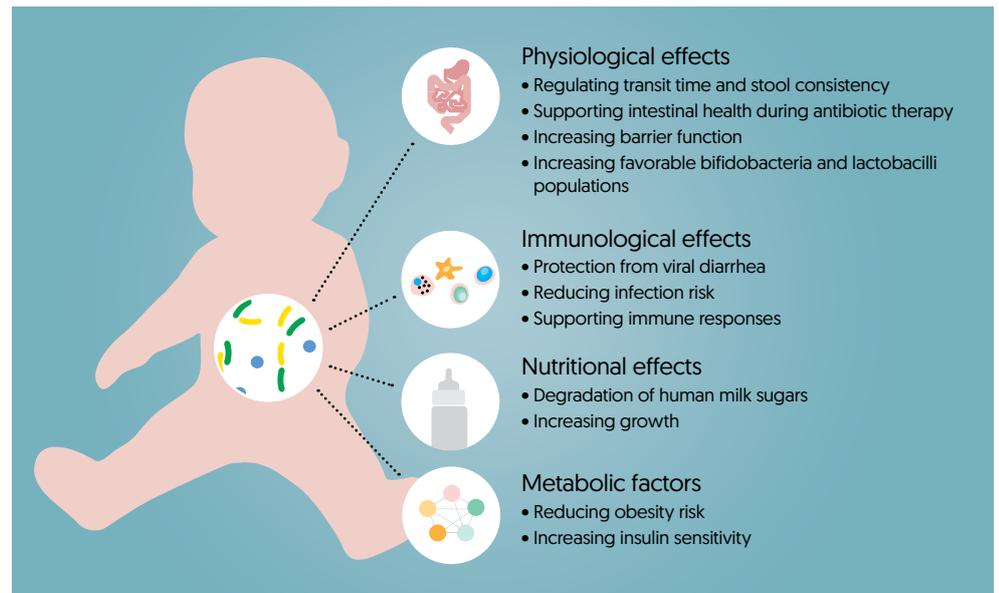


Improving the intestinal health of newborns

The gastro-intestinal (GI) tract and microbiota of a newborn baby distinctly differ from that of adults. The first years of life are a critical period for gut colonization and the development of a healthy, balanced core gut microbiota.

After birth, a newborn is exposed to environmental microbes which immediately colonize the GI tract. The first two till three years of life a dynamic interplay occurs between host cells, the immune system, and successive bacteria. The first microbes to colonize the infants' gut are mostly *Bifidobacterium* species. These first bacterial species are critical for the development of a healthy adult microbiota and a properly functioning immune system later in life¹. Several factors influence the development of the microbiota of the baby. Natural delivery and breastfeeding have been associated with beneficial health effects related to gut colonization and development and low incidence of immuno-

Figure 1: Main mechanisms of probiotic activities in infants. Source Chassard et al.¹



logical disorders. More and more diseases are linked to dysbiosis of the microbiota of neonates. Allergy, colic, and even obesity are now associated with a less diverse microbiota or lack of bifidobacteria and lactobacilli

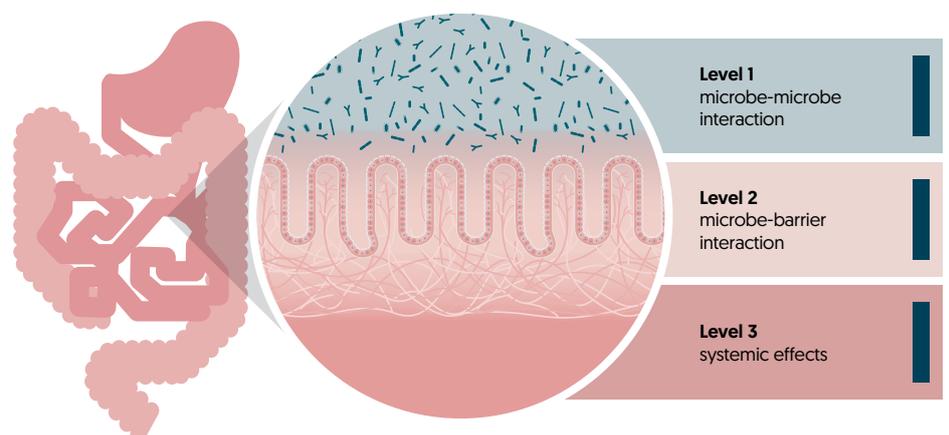
in the infant's gut². Probiotics can provide infants with the necessary beneficial microbes to prevent diseases and restore the microbial balance. Winlove Baby is well tolerated by infants and is safe to use.

Strain selection

Winlove Baby is a broad-spectrum, multi-species probiotic formulation developed for managing and maintaining the intestinal balance of infants. The formulation contains 4 specifically selected probiotic strains. Probiotic strains can exert health effects at different levels in the gut [see figure 2]. The bacterial strains of Winlove Baby are active on all three levels. The strains have been screened for their capacity to:

- inhibit various pathogens such as *C. difficile* and *E. coli*
- improve the barrier function
- influence the immune system.

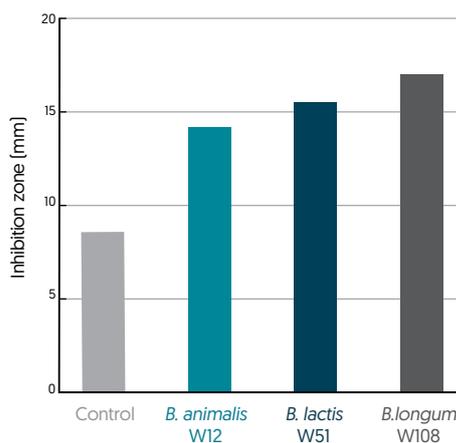
Figure 2: Probiotic strains can be active on three levels in the gut. The strains in Winlove Baby have been proven active at all three levels.



In vitro evidence

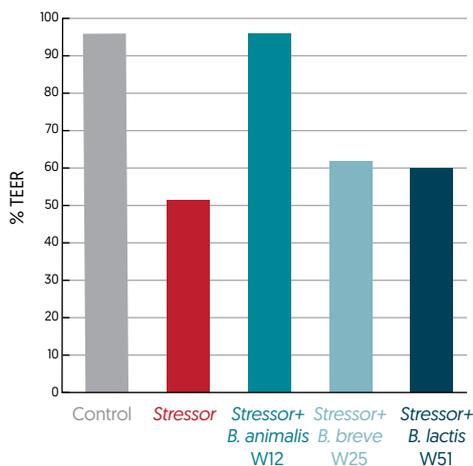
The most dominant genera in the healthy infant's gut is *Bifidobacterium*. Therefore, Winclove Baby consists of four *Bifidobacterium* species, of which research has shown to be present in the gut of infants³. These *Bifidobacterium* species can restore the balance of the new-born's microbiota. Three strains of Winclove Baby have been added for their ability to inhibit growth of *E. coli*, a pathogen associated with infant colic. These strains have shown good capability to inhibit growth of *E. coli* (figure 3).

Figure 3: Inhibition of *E.coli* by three strains in Winclove Baby. The larger the zone, the better the inhibition.



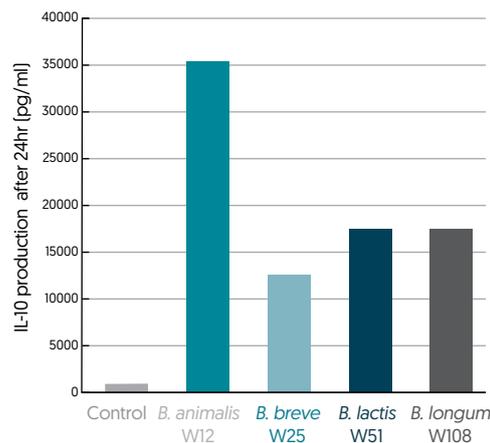
Maintenance of the intestinal barrier function is critical for essential physiological processes. Three strains of Winclove Baby have been added for their ability to protect the integrity of the intestinal lining. Their efficacy has been tested in a Trans Epithelial Electrical Resistance (TEER) model. All strains were capable to strengthen the intestinal barrier function when a stressor was added. (figure 4).

Figure 4: TEER data of three strains in Winclove Baby. The higher %TEER, the better the barrier function.



Disruptions in the early microbiota can cause an imbalance in immune response regulating cells (Th1/Th2), which is one of the main mechanisms behind the development of allergies and asthma. All the strains in Winclove Baby are selected and tested to maintain a balanced immune system by inducing the production of IL-10; a cytokine with anti-inflammatory effects. (figure 5).

Figure 5: Production of the anti-inflammatory cytokine IL-10 after 24hr by the strains in Winclove Baby.



Formulation details

Indication	Broad-spectrum probiotic for improving the intestinal health of babies.	
Colony forming units (CFU)	1 x 10 ⁹ CFU/gram.	
Bacterial strains	<i>B. animalis</i> W12 <i>B. breve</i> W25	<i>B. lactis</i> W51 <i>B. longum</i> W108
PROBIOACT® Technology	 Protective and nutritional ingredients that improve the stability of the formulation, GI survival and metabolic activity of the bacteria.	
Recommended daily dosage	Variable.	
Treatment period	For as long as desired/needed.	
Storage and stability	2 years stable at room temperature, no refrigeration needed.	
Available dosage forms	Dry powder which can be supplied as bulk, sachets, capsules or fully packed (with your design).	
Safety and Quality Profile	 	All probiotic strains have the Qualified Presumption of Safety (QPS) status ⁴ . Winclove is a NSF International Certified GMP Facility for manufacturing dietary supplements and is ISO 22000:2005 certified for the development and production of pre- and probiotics.
Marketing	Private label.	

References

1. Chassard *et al.* Probiotics tailored to the infant: a window of opportunity. *Cur Opin Biotechnol.* 2014, 26:141–147.
2. Lu *et al.* Gut microbiota and the development of pediatric disease. *J Gastroenterol.* 2015; 50:720-6.
3. Matamoros *et al.* Development of intestinal microbiota in infants and its impact on health. *Trends in microbiology.* 2013;944: 1-7
4. The EFSA Journal. 2007;587:1-16.

This information is intended for business professionals only, not for consumers. The formulations contained herein are concepts, not commercially available and not intended to diagnose, cure or prevent any diseases.

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