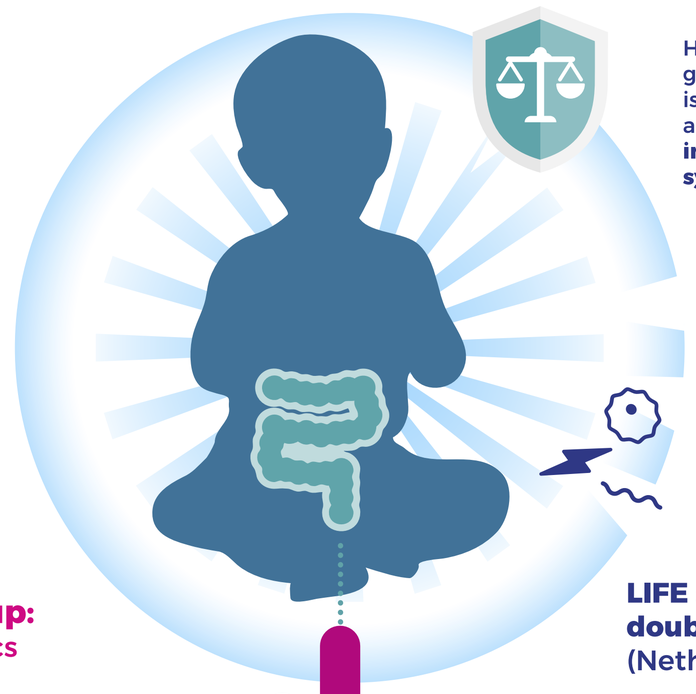
Infant formula with prebiotics and postbiotics modulates the gut microbiota and its functioning towards a more breastfed-like

Early life is a critical period to establish a balanced gut microbiota and develop a healthy immune system.[1,2]

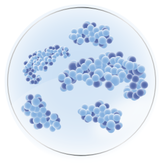
Introduction
Human milk is the best source of nutrition for infants; it contains many bioactive compounds such as oligosaccharides, immune cells and bacterial compounds to support immune through gut functioning and development.

Danone Nutricia developed a new concept with specific prebiotics and postbiotics with the aim to resemble the diversity, complexity and functionality of human milk more closely.

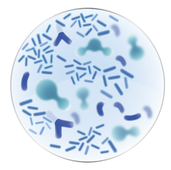


Healthy gut and gut microbiota is important for a **healthy immune system**[3,4]

Up to **80%** of **immune cells** are located in the **gut**[5]



Prebiotics[6]:
Prebiotics are substrates that are selectively utilized by host micro-organisms conferring a health benefit



Postbiotics[7,8]:
Postbiotics are bioactive compounds produced by food-grade micro-organisms in a fermentation process

Experimental group:
Prebiotics + Postbiotics

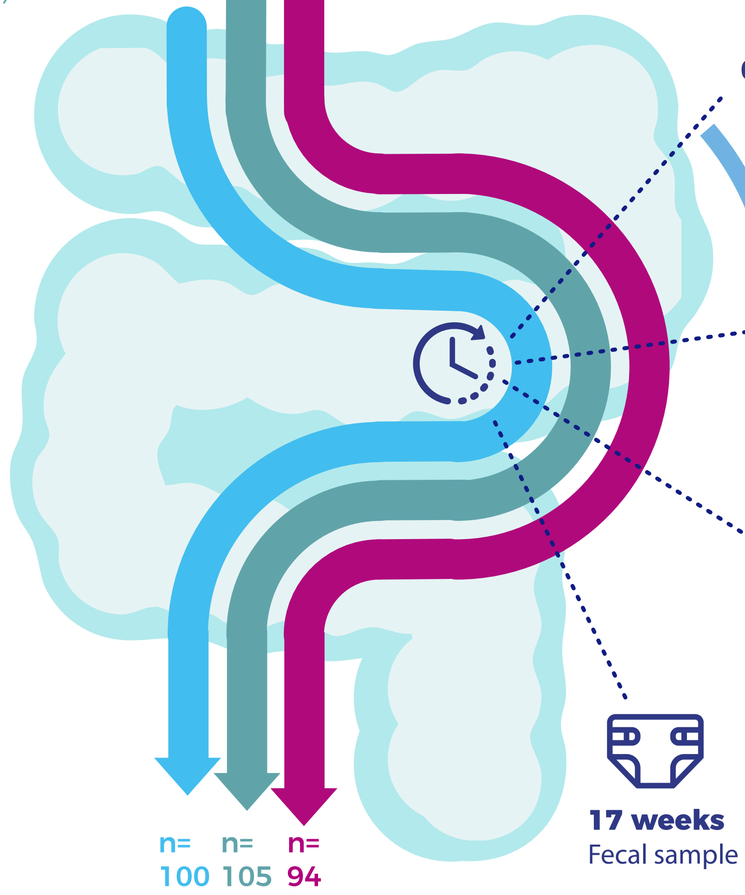
Control group:
(No prebiotics , no postbiotics)

Reference group:
Exclusively breastfed

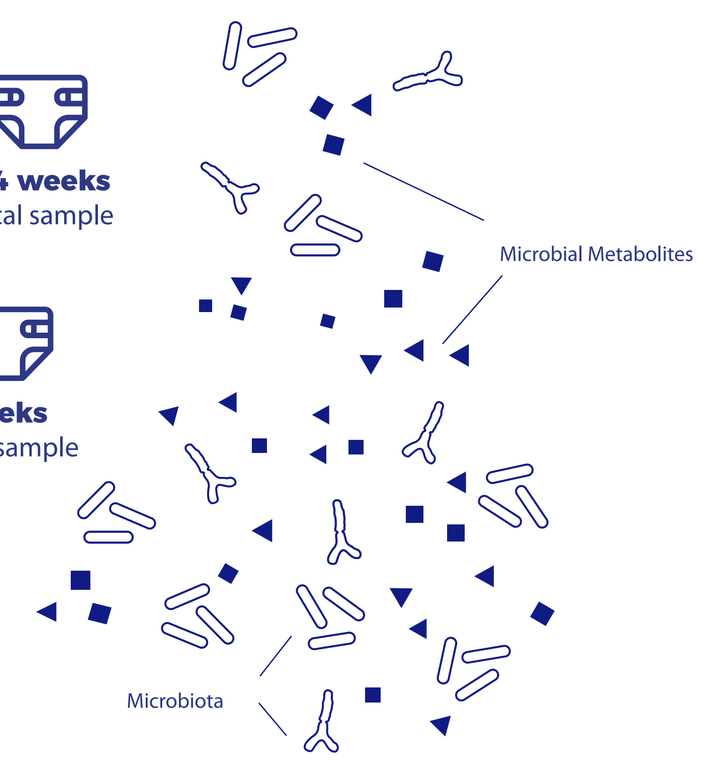
LIFE study: A randomized, controlled, double-blind clinical study
(Netherlands Trial Register: NTR3455)

LIFE Clinical Study
Investigating the efficacy of:
Infant formula with prebiotics (scGOS/lcFOS, in 9:1 ratio, 0.8 g/100 ml) and postbiotics from the Lactofidus™ process, versus a control formula in healthy infants age at inclusion ≤ 28 days

Primary outcome[9]
The study demonstrated that infant formula with prebiotics and postbiotics is well-tolerated, supports an adequate infant growth and is safe for use in healthy term infants.



Exploratory investigation
N ≈ 30 complete samples sets per arm (vaginally born healthy infants, without any medication use)



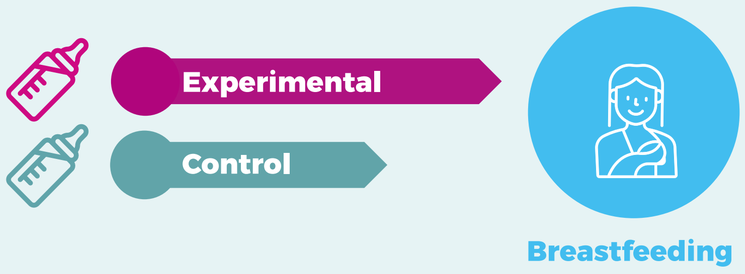
Stool characteristics

Fecal microbiota composition

Fecal microbiota Activity

Conclusion

Infant formula with prebiotics and postbiotics ensures microbiota characteristics closer to Breast-Fed (BF) infants.[10]



Stool consistency closer to BF infants

Microbiota composition closer to BF infants

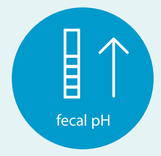
Levels of differential bacterial groups (e.g. Blautia) in the experimental arm more in line with the levels detected in the BF infants

Increased beneficial bacteria

Decreased potential harmful bacteria

Microbiota activity closer to BF infants

Overall metabolite profile closer to BF infants
(e.g. amino acids, lipids)



Increased sIgA

Lower gut pH encourages growth of healthy bacteria

Increased levels of SCFA

References

1. McMullen S et al. Proc Nutr Soc 2009
2. Martin R. et al. Benef Microbes 2010
3. Houtghteling P. et al. J Pediatr Gastroenterol Nutr 2015
4. Belkaid Y. et al. Immunity 2015
5. Furness J. et al. Am J Physio. 1999
6. Gibson G. et al. Nat Rev Gastroenterol 2017
7. Salminen S., Szajewska H., Knol J. The biotics family in early life. Essential Knowledge Briefing. Wiley, Chichester (2019)
8. Aguilar-Toala J. et al. Trends in Food Science & Technology 2018
9. Rodriguez-Herrera A. et al. Nutrients 2019
10. Tims S., Rodriguez-Herrera A. et al. J Pediatr Gastroenterol Nutr 2018;66(S2);N-O-013:884