Algemene gegevens	
PPS-nummer	AF-12190
Titel	PPS Food4Live Solutions
Topsector en innovatiethema	TKI Agrifood, Theme 6 (Health) and Theme 4 (sustainability of livestock breeding).
Projectleider (onderzoek)	Jasper Kieboom (TNO)
PPS-coördinator (namens private partij)	Laurien Ulfman (FrieslandCampina)
Contactpersoon overheid	
Status (lopend of afgerond)	Lopend
Type onderzoek (F, T of V)	F
Werkelijke startdatum	08-07-2013
Werkelijke einddatum	31-12-2016
Korte omschrijving inhoud	Optimal food in the first phase of life will set a fundament for health later in life. By combining both microbial ecology and newborn physiology in relation to health and disease, new leads will be obtained for the development of functional foods and/or ingredients for the infant formula market and the calf husbandry. The resulting reduction in infections will decrease antibiotic usage in calves due to a higher resistance and a healthier start of life in infants through dedicated infant formulas.

Highlights

FrieslandCampina and VanDrie Group aim for a common goal; making the optimal food for the first phase in life to ensure optimal growth and development of a healthy newborn. Two interesting observations triggered this research initiative: 1) breastfeeding and suckling protects against the development of infections in both human and bovine newborns, respectively, and 2) the microbiota of breast and formula fed newborns has a different composition at various sites along the respiratory and gastrointestinal tract.

Since the host's microbiome is assumed important for pathogen-resistance and immune-modulation, and thus for a healthy development of newborns, we hypothesize that the composition of the microbiota of both human and bovine newborns plays an important role in resistance against infections and is steerable through diet. By comparing the microbiota of breastfeeding with novel formula feeding interventions, insights will be obtained on the impact of formula feeding on the microbiota composition of infants and calves. Data regarding health status of infants and calves will be linked with the microbiota profiles as determined by advanced molecular technologies.

Extensive microbiota profiles of calves and infants were generated and analyzed using an Illumina platform. Integrated models, that link microbiota composition with health outcomes, have provided us with the characterization and understanding of microbiota profiles that are associated with health parameters in infants. These insights are currently used to carry out an intervention study. By combining both microbial ecology and newborn physiology in relation to health and disease, new leads will be obtained for the development of functional foods and/or ingredients for the infant formula market

and the calf husbandry. The resulting reduction in infections will decrease antibiotic usage in calves due to a higher resistance and a healthier start of life in infants through dedicated infant formulas. Optimal food in the first phase of life will set a fundament for health later in life.

Recent data show a strong effect of early-life environmental exposures including infant feeding on respiratory microbiota development (Bosch et al., 2016). Moreover, preliminary data show a strong resemblance between nasopharynx microbiota of Asian and European infants suggesting that the biological niche more than geographical location is determines the composition of the respiratory microbiota. Currently the data of the Asian infants are being studied in the context of the infant food**.**

Aantal opgeleverde producten in 2016			
Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops/ invited lectures
1	-	-	-

Bijlage: Titels van de producten of een link naar de producten op een openbare website

- EBioMedicine. 2016 Jul;9:336-45. doi: 10.1016/j.ebiom.2016.05.031. Epub 2016 May 26. Development of Upper Respiratory Tract Microbiota in Infancy is Affected by Mode of Delivery. Bosch AA, Levin E, van Houten MA, Hasrat R, Kalkman G, Biesbroek G, de Steenhuijsen Piters WA, de Groot PK, Pernet P, Keijser BJ, Sanders EA, Bogaert D.