



PPP Project Annual Report 2018

General information	
PPP number	TKI-AF-16187
Title	Novel dual species fermented dairy foods and formulas with enhanced functionality
Theme	Food and health
Executive knowledge institution(s)	Wageningen University, Laboratory of Food Microbiology Danone Research
Research project leader (name + e-mail address)	Prof. dr E.J. Smid, eddy.smid@wur.nl
Coordinator (on behalf of private parties)	Dr. Kaouther Ben Amor, Danone Nutricia research B.V.
Government contact person	Dr. Kees de Gooijer
Total project size (k€)	786 kEUR (589 kEUR excl. in-kind contribution)
Address project website	n.a.
Start date	1-9-2017
End date	31-8-2021

Approval coordinator/consortium	
The annual report should be discussed with the coordinator/the consortium. The TKIs appreciate being informed of possible feedback on the annual report.	
The coordinator has assessed the annual report on behalf of the consortium:	<input checked="" type="checkbox"/> approved <input type="checkbox"/> rejected
Possible feedback on the annual report:	

Short content description/aim PPS
What is going on and how is this project involved? What will be delivered by the project and what is the effect of this?
<p>This fundamental research project will focus on the generation of new insights that support the development of dual-species fermented dairy foods and formulas delivering a profound effect on infant gut microbiome balance, alleviating symptoms of chronic disorders, and thereby improving early quality of life as well as later health by reducing the risk of non-communicable diseases (NCD) with the concomitant impact on population health and health-care costs. The results of this project will create new market opportunities and applications for the food and potentially pharmaceutical industries. Knowledge of the microbial interactions in dual-species fermentations such as those used for the production of functional fermented dairy foods and powdered infant formulas is scarce and hampers the optimization functional product characteristics and the development of reliable and robust processing methods. The scientific and technical knowledge generated by this project will allow manufacturers of functional infant formulas to develop novel production strategies and next-generation health-promoting products with a significantly shorter time-to-market.</p>

Planning and progress (if there are changes to the project plan, please explain)	
Is the PPP going according to plan?	Yes
Have there been changes in the consortium/project partners?	No
Is there a delay and/or deferred	No

delivery date?	
Are there any substantive bottlenecks?	No
Are there any deviations from the projected budget?	No

Results in 2018/ so far

Give a short description of the high-lights and (most important) project deliverable in 2018 / so far and their target group

This fundamental research project focuses on dual-species fermented dairy foods and formulas delivering a profound effect on infant gut microbiome balance, alleviating symptoms of chronic disorders, and thereby improving early quality of life as well as later health by reducing the risk of non-communicable diseases (NCD) with the concomitant impact on population health and health-care costs. The results of this project are expected to create new market opportunities and applications for the food industry and potentially pharmaceutical industries.

Knowledge of the microbial interactions in dual-species fermentations such as those used for the production of functional fermented dairy foods and powdered infant formulas is scarce and hampers the optimization functional product characteristics and the development of reliable and robust processing methods. The scientific and technical knowledge generated by this project will allow manufacturers of functional infant formulas to develop novel production strategies and next-generation health-promoting products with a significantly shorter time-to-market.

Results achieved in 2018:

The selected consortium consisting of a fast acidifying lactic acid bacterium and a probiotic *Bifidobacterium* sp. has been studied in single and co-culture. This particular microbial consortium can be used to produce fermented dairy ingredients which exert health promoting effects upon ingestion. The growth characteristics of both partners in the microbial consortium have been investigated with special emphasis on the balance between growth rate and lysis of the lactic acid bacterium. The main trigger for cell lysis of the lactic acid bacterium was identified for an industrial strain as well as for a publically available strain. Furthermore, metabolic adaptation of *Bifidobacterium* sp. towards conditions of extreme nutrient limitation has been studied and described in terms of metabolic fluxes and energetics of growth. Finally, we investigated the impact of several relevant stress factors (heat, low pH, hydrogen peroxide) on survival of *Bifidobacterium* sp. which was pre-cultured under various conditions.

Number of delivered products in 2018 / so far (<i>in an appendix, please provide the titles and/or description of the products or a link to the products on public websites</i>)			
Academic articles	Reports	Articles in journals	Introductions/workshops

Appendix: Names of the products or a link to the products on a public website