



General information	
PPP number	TKI-AF-16187
Title	Novel dual species fermented dairy foods and formulas with enhanced functionality
Roadmap/Umbrella	Food and health
Executive knowledge institution(s)	Wageningen University, Laboratory of Food Microbiology Danone Res
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
Start date	1-9-2017
End date	31-8-2021

Approval coordinator/consortium	
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
<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	
Is the PPP going according to plan? ¹	Yes
Have there been changes in the consortium/project partners?	No
Is there a delay and/or deferred delivery date?	No, taking into account that the PhD-candidates were appointed in September 2017. Therefore 1-9-2017 is the actual start date of the project
Are there any substantive bottlenecks? Provide a brief description	No

¹ If applicable, use the explanation from the financial project report

Are there any deviations from the projected budget?	No
Do you expect a patent application to arise from this PPP?	Yes

<p>Current summary of the project for the website Kennisonline</p> <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> <p>Results achieved so far (2017): A consortium consisting of a fast acidifying lactic acid bacterium and a probiotic <i>Bifidobacterium</i> has been selected. This 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 in the balance between growth rate and lysis of the lactic acid bacterium. Heat resistant variants of the lactic acid bacterium have been selected and their phenotypes with respect to growth and lysis are currently being investigated. Variants of the lactic acid bacterium have been isolated and in comparison with the parent strain, they show reduced lysis, higher growth rates and higher biomass yields under standard growth conditions.</p> <p>Finally, retentostat cultivations with one of the selected <i>Bifidobacterium</i> sp. strains is currently being performed to measure robustness, cultivability, viability, morphologic and physiological changes as a function of growth rate. Special emphasis will be on the acquired stress resistance induced upon growth at extremely low rates.</p>

<p>Highlights:</p> <ol style="list-style-type: none"> 1. Natural heat resistant variants of the lactic acid bacterium have been isolated and compared to the parent strain. They show reduced lysis, higher growth rates and higher biomass yields under standard growth conditions. 2. <i>Bifidobacterium</i> sp. has been subjected to retentostat cultivation with the objective to investigate the impact of growth rate on stress resistance factors encountered during production of fermented dairy ingredients

Number of delivered products in 2017			
Academic articles	Reports	Articles in journals	Introductions/workshops
0	0	0	0