



Algemene gegevens	
PPS-nummer	AF-15269
Titel	Sustainable Future Proteins Focus on nutritional and health-promoting quality
Thema	Healthy and Safe
Uitvoerende kennisinstelling(en)	<i>WFBR; UU-UIPS</i>
Projectleider onderzoek (naam + emailadres)	Prof. Dr. Harry J. Wichers harry.wichers@wur.nl
Penvoerder (namens private partijen)	Dr. Prescilla V. Jeurink (Nutricia) prescilla.jeurink@danone.com
Contactpersoon overheid	
Werkelijke startdatum	1 April 2016
Werkelijke einddatum	31 March 2020

Goedkeuring penvoerder / consortium	
De jaarrapportage dient te worden besproken met de penvoerder/het consortium. De TKI's nemen graag kennis van evt. opmerkingen over de jaarrapportage.	
De penvoerder heeft namens het consortium de jaarrapportage	<input checked="" type="checkbox"/> goedgekeurd <input type="checkbox"/> niet goedgekeurd
Evt. opmerkingen over de jaarrapportage:	

Korte omschrijving inhoud/doel PPS	
Wat is er aan de hand? Wat doet het project daaraan? Wat levert het project op? Wat is het effect hiervan?	
<p>Due to (globally) increasing demands for protein for inclusion into the human diet, alternative sources for such proteins, from maximally sustainable sources, need to be identified. This project aims at studying nutritional properties of proteins from sustainable sources. Therefore, a toolbox will be developed to assess the digestibility of proteins, to evaluate how well a given (mixture of) protein(s) is able to meet human amino acid requirements, and which spectrum of biologically active peptides is formed during digestion, with an emphasis on effects on gastro-intestinal health.</p>	

Planning en voortgang (indien er wijzigingen zijn t.o.v. het projectplan svp toelichten)	
Loopt de PPS volgens planning?	Yes
Zijn er wijzigingen in het consortium/de projectpartners?	The consortium has been expanded with Cargill, Lesaffre and Pepsico.
Is er sprake van vertraging en/of uitgestelde opleverdatum?	No
Is er sprake van inhoudelijke knelpunten, geef een korte beschrijving	No
Is er sprake van afwijkingen van het ingezette budget/de begroting? Indien financiering uit WR-capaciteit: is er sprake van	Because of the expansion of the consortium, the subsidy from the Ministry has been extended from 2017. Unfortunately the extension of 2017 has not been paid. Therefore the costs were higher than the amount of subsidy received which resulted in

NAPRO? Zo ja geef een toelichting	"negative NAPRO" of k€ 40. The missing extension of the subsidy of 2017 will be paid in the coming years. This way the deficit of 2017 will be cleared.
Verwacht u een octrooi-aanvraag vanuit deze PPS	Unknown as per today.

Highlights: geef een korte beschrijving van de belangrijkste resultaten tot nu toe

The entire set of proteins, resp. protein-containing samples, has been analysed with respect to structural properties of the proteins, their degree of contamination with pyrogens (relevant for immune assays).

Also, their digestibility in in vitro-models has been completed.

Immunological read-outs are in progress.

Currently, a human trial with a selected set of proteins is in preparation.

With respect to the development of a gut-on-a-chip, the following steps have been made:

- Suitable cell types have been selected
- Support material has been selected
- Cultivation conditions have been defined
- Cultivation conditions to have been found to affect the phenotype of cells
- Suitable read-out systems to assess gut barrier properties have been implemented
- The testing of in vitro-digesta is in progress

Aantal opgeleverde producten in 2017 (geef in een bijlage de titels en/of omschrijving van de producten of een link naar de producten op openbare websites)

Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops
	2	2 (WFI and Discover)	

Actuele samenvatting van het project voor de website Kennisonline

The global population is projected to reach more than 9 billion by 2050, and by then **the global demand for food will essentially double**. There is an urgent need for sustainable and resource-efficiently produced proteins with nutritional and health promoting qualities for inclusion in the human diet. An optimal use of proteins from various sources, customised for specific (health) needs, requires that this protein transition is guided by science-based tools. In this project, the focus will be on the evaluation of the gastro-intestinal (GI) health values, that is bio-functional activity, and nutritional quality of currently available proteins for inclusion in the human diet of the future.

To this end, proteins from a variety of protein-suppliers will be analysed for their nutritional qualities and bio-functional properties on metabolism, gut health, immunological tolerance induction, and microbiota ecology, using state of the art *in vitro* and *in vivo* tools. These tools will subsequently be used to evaluate the impact of digestion on the nutritional quality (release of essential amino acids, degree of digestion, bio-availability) and the health effects (gut-barrier function, and/or interaction with intestinal immune cells) of the various proteins. In addition, the effectiveness of supplementations or mixtures of proteins and/or amino acids from different sources to optimise the nutritional and/or health quality will be investigated.

The overall objective of this proposal is to investigate the nutritional quality and bio-functional activity of proteins from sustainable and resource-efficient sources. Primarily in scope are the nutritional requirements, the protection of the gut-barrier function, the promotion of immunologic tolerance and maintenance/development of a healthy microbiota. Comprehensive *in vitro* and *in vivo* analyses will be developed and combined in a systematic screening. This will result in a toolbox that will allow future research with emerging interesting proteins sources.

Bijlage: Titels van producten en links naar informatie op openbare websites (w.o. Kennisonline)

<https://www.wur.nl/en/Research-Results/kennisonline/Sustainable-Future-Proteins-Focus-on-nutritional-and-health-promoting-quality.htm>

<https://www.google.nl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKewiHqYSE397ZAhVGPRQKHeT4AIQtwIIOTAC&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DlawTiTi3Wck&usg=AOvVaw3yvbZsRnpQVqURi6xBVB-s>

Akkoord: Hans van der Kolk (Topsectorsecretaris)