PPP final report
PPPs that have been finalized need to deliver a factual and financial final report. For the financial report an overview of the project expenses on realisation and financing should be give in a separate format.
Final reports will be published in their entirety on the TKI/top-sector websites. Please make sure there are no confidential matters in the report.
PPP final reports have to be submitted - pooled for each research organisation - before 1 April 2019 to the TKIs at info@tkitu.nl, or at info@tki-agrifood.nl. For Wageningen Research the delivery of reports occurs centrally.

General data	
PPP number	AF-12518
Title	HDL functionality
Theme	Gezond en Veilig
Research Institute (s) involved	UM
Project leader research (name + email address)	R.P. Mensink (r.mensink@maastrichtuniversity.nl)
Coordinator (on behalf of private parties)	G. Wagner (DSM)
Contact person of government	
Total project budget (k€)	456
Project website address	--
Starting date	1-12-2013
Final date	30-11-2016

Approval coordinator/consortium The final report has to be discussed with the coordinator/consortium. The TKI(s) like to be informed regarding potential comments on the final report.	
The annual report is …… by the coordinator on behalf of the consortium	v approved □ not approved
Potential comments regarding the final report	--

Brief description content/aim PPP What is the matter and what does the project contribute? What does the project deliver and what are the effects of its delivery?
Epidemiological data clearly support that a low plasma high-density lipoprotein (HDL) cholesterol concentration is a cardiovascular disease (CVD) risk factor. However, evidence from recent clinical studies showed that raising plasma HDL cholesterol concentrations per se failed to reduce CVD risk, indicating that the understanding of HDL cholesterol metabolism and the health consequences of HDL cholesterol raising interventions is limited. Consequently, there is an increasing interest to better understand the real impact of HDL cholesterol and more importantly to understand how to improve plasma HDL cholesterol concentrations and at the same time improve HDL functionality. Improving HDL functionality is considered crucial in view of interventions to reduce CVD risk. The aim of the project is to contribute to the understanding of the relationship between the various markers of HDL functionality and vascular function. Ultimately, the research will enable product innovations with substantiated health claims and thus offering benefits in the area of cardiovascular health and CVD risk management. The extension project was hosted as integral part in a large TiFN project on cardiovascular health.

Mutations with respect to the original project plan and follow-up	
Have there been changes in the consortium/project partners? If so, which.	No
Have there been factual changes in the project?	No
Has a patent application been filed from this PPP (or a first-filing)?	No
Has a spin-off developed from this project (contract research, additional funding or spin-off activity)?	No
How many years will the private parties need in practice to use results from this project?	Unknown
How did the project contribute to the development of the research organisation involved (e.g. scientific track record, new technology, new collaboration)?	Research organisation has already an outstanding expertise in this field of research.
Will there be a follow-up for the project such as a new project or a new collaboration? If so, please explain.	?

Results

What tangible results the project has yielded?

The project has contributed to basic knowledge regarding mechanisms involved in HDL functionality and insights regarding options for selected dietary compounds to affect HDL functionality. It was observed that:

- the functionality of HDL particles of slim humans is better than that of humans with overweight or obesity;
- weight loss does not improve the HDL particles' functionality; however, it might occur that effects only become visible after a long period of stability in weight;
- variation in DNA composition - SNP: single nucleotide polymorphism - of genes involved in the HDL metabolism goes hand in hand with a functionality change of HDL particles;
- no effects of plant sterols and stanols, and theobromine as dietary compounds tested on HDL functionality was found.

What are the effects of these results and for whom?

The results do not (yet) offer entries for interventions to improve HDL functionality which lead to product innovations aiming at CVD risk reduction.

What has not been delivered according to the original project plan and for what reason(s)?

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Deliverables (give a short description per project deliverable)

The development of tools to enable monitoring of potential effects on HDL functionality has taken a substantial part of the capacity in this project:

- Assays have been developed and validated for micro-RNA analysis in HDL
- Analyses were completed on effects of plant sterols and stanols, and theobromine on cholesterol efflux capacity
- Analyses performed to examine effects of weight loss on HDL functionality

Number of delivered products in 2018 (give titles and/or descriptions of products, or a link to the products on the project website, or other public websites).			
Scientific articles (incl. PhD thesis)	Reports	Articles in professional journals	Lectures/workshops
5			

Annex:

- Talbot, C.P.J., J. Plat, A. Ritsch and R.P. Mensink (2018). Determinants of cholesterol efflux capacity in humans. Prog. Lipid Res. 69: 21 - 32.
- Talbot, C.P.J., J. Plat, P.J. Joris M. Konings, Y.H.A.M. Kusters, C.G. Schalkwijk, A. Ritsch and R.P. Mensink (2018). HDL cholesterol efflux capacity and CETP activity are associated with body mass, but are not changed by diet-induced weight loss: a randomized trial in abdominally obese men. Artherosclerosis 274: 23 - 28.
- Talbot, C.P.J., R.P. Mensink, L. Smolders, V. Bakeroot and J. Plat (2018). Theobromine does not affect fasting and postprandial HDL cholesterol efflux capacity, while it decreases fasting miR-92a levels in humans. Mol. Nutr. Food Res. 62, 1800027 (8 pp.).
- Talbot, C.P.J., Cholesterol efflux as a measure of HDL functionality in humans: impact of genetics, diet and weight loss. PhD Thesis, Maastricht University (2018).
- Talbot, C.P.J., J. Plat, H.E. Popeijus, A. Ritsch and R.P. Mensink. SNPs located in ABCA1, ABCG1, LXRß and CETP are associated with plasma cholesterol efflux, submitted.