General information

PPP-number	AF 18017
Title	Protein Compass
Theme	SFI Sustainable Food Initiative
Implementing institute	WFBR
Project leader research (name + e-mail address)	Floor Boon floor.boon@wur.nl
Coordinator (on behalf of private partners)	Margot Schooneveld-Bergmans (DSM)
Project-website address	https://topsectoragrifood.nl/project/af-18017-protein-compass/
Start date	1 April 2019
Final date	31 March 2021

Approval by the coordinator of the consortium

The annual report must be discussed with the coordinator of the consortium. The "TKI's" appreciate additional comments concerning the annual report.

Assessment of the report by the coordinator on behalf of the consortium:	x Approved ☐ Not approved
Additional comments concerning the annual report:	x

Summary of the project

Problem definition	The protein intake of humans is primarily animal based and there is need for the development of new sustainable and healthy plant-based food products. A major challenge, however, is the lack of overview and predictability of the intrinsic functional, nutritional and sensorial properties of the protein raw materials, which hampers fast and successful identification of the best plant-protein ingredient for a specific application.
Project goals	The Protein Compass project targets to collect and generate a systematic overview of the characteristics of protein rich raw materials and protein isolates. This information is brought together in a database containing all relevant characteristics, including the future potential of the production chain and the economic viability, of the most promising plant-protein sources. The data base will contain publicly available information, retrieved by smart digital technologies, and newly generated data from standardized, preferably high throughput, methods to ensure reliability in comparing data from different sources.

Results

Planned results 2019	Deliverable 1: reliable database on nutritional, functional and sensorial characteristics
	   - Selection of plant protein sources to be used for method development;
	   - Setting up structure of the database;

	- Selection of properties of interest for nutritional, functional and sensorial characteristics; - Fill the first version of the database with literature data. Deliverable 2: Standardized methods for further systematic generation of information that is compatible with database comparison strategies - Obtain protein ingredients for experimental work; - Selection of measurement methods for the properties of interest and dividing them into straightforward, standard methods and methods for higher throughput.
Achieved results 2019	Deliverable 1: reliable database on nutritional, functional and sensorial characteristics - Five plant-protein sources have been selected; - Database is setup and applicable for literature and experimental data. Rules how to deal with empty cells and which cells are mandatory to be filled in are agreed upon; - Fields have been defined for the nutritional, functional and sensorial characteristics in the database; - Start is made with filling the database with literature data. Deliverable 2: Standardized methods for further systematic generation of information that is compatible with database comparison strategies - 13 commercial ingredients (including suppliers) covering a variety in protein content and applications have been selected to be used for method development. These commercial ingredients are almost all in-house; - Nutritional. Properties of interest: composition, ANF's and AA score. Method development required for ANF's. Approach and priorities to be discussed with the partners; - Functional. Properties of interest: solubility/dispersibility, thermostability, viscosity, gelling and emulsifying capability. For all method development is required. Selection of standard (well established) measurement methods including protocols for sample preparation and selection of conditions (concentration, pH, temperature, salt content and oil content); - Sensorial. Properties of interest: colour, sensory description, volatiles and non-volatiles. Method development required for volatiles and non-volatiles (taste and astringency). Approach identification of marker compounds to reduce data evaluation.
Planned results 2020	Deliverable 1: reliable database on nutritional, functional and sensorial characteristics - First version of the database in SQL; - Ontologies to ensure findability; - User interface PowerPivot and Access (both part of Microsoft Office so no license required); - Improved second version. Deliverable 2: Standardized methods for further systematic generation of information that is compatible with database comparison strategies - Selection of the most suitable measurement method (fast, reliable and flexible (wide range of protein sources)); - Nutritional: ANF. Selecting and setting up (fast) manual assays for max 5 ANF's, developing protocol for Hamilton (pipetting robot) for selected manual assays, compare measurements and required effort (time); - Functional: inventory of available and to be designed protocols for Hamilton (high throughput), protocol development of a selected number of properties, compare measurements and required effort (time); - Sensorial: compare methods based on marker compounds with methods taking into account a wider spectrum.

Deliverables/products in 2019 (provide the titles and /or a brief description of the products/deliverables or a link to a website.
Scientific articles: x
External reports: x
Articles in professional journals/magazines: Pyett. S. 2019. Towards sustainable & equitable global protein systems. World Food Ingredients, October/November, pp 128-131.
(Poster) presentations at workshops, seminars, or symposia. x
TV/ radio / social media / newspaper: x
Remaining deliverables (techniques, devices, methods, etc.): x

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