



General information	
PPP-number	AF-18042
Title	SPRINT
Theme	Gezond en veilig, Ciculair
Implementing institute	Wageningen Food and Biobased Research
Project leader research (name + e-mail address)	Jerome Diaz, jerome.diaz@wur.nl
Coordinator (on behalf of private partners)	Erik de Been
Project-website address	n.a.
Start date	April 1, 2019
Final date	March 30, 2022

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
Additional comments concerning the annual report:	None

Summary of the project	
Problem definition	<p>SPRINT is a multidisciplinary public-private partnership (PPP) which aims to achieve breakthroughs in developing sustainable, multi-functional, clean label ingredients for food and pet food manufacturers from available co-products within the agri-food industry. The consortium, represented by stakeholders from across the food production chain comes together to fill the knowledge gaps between demand and supply that is application focused and functionality driven. The increasing consumer focus towards healthy, natural, clean label foods and the emphasis on implementing total use of resources are the main drivers for SPRINT.</p> <p>The main innovation goal of the consortium is to create a technology toolbox for the biorefinery of co-products leading to the production of multi-functional, clean label ingredients for added value in food and pet food products. Both technological and health functionalities of co-products will be improved within SPRINT. Technological functionalities of co-products will be improved in terms of thickening, gelling, emulsifying, and water binding, among others. Health functionality of co-products such as digestive and gut health (pre-/probiotic capacity, immune effects) and metabolic health (inhibition of ACE, DPPH4, among others) will be identified and improved. The improvements will be based on mild treatments with the focus on utilizing as much of the co-product as possible. The co-products within SPRINT includes potato pulp, peels, protein and fiber, oat flour and oat hull, and dairy co-products (milk permeate concentrate and nano-filtration retentate).</p>
Project goals	SPRINT will close the knowledge gaps and will speed up the evaluation of ingredient demand from the food and pet food manufacturers using currently available co-products from the agri-food industry. The toolbox envisaged contains among others predictive mathematic models that are validated using food and pet food model systems in combination

	<p>with new ingredients obtained from agri-food co-products, using natural and mild processing. SPRINT will develop value added consumer food and pet food products using a science driven reformulation approaches. In addition, SPRINT will also develop functionality-driven biorefineries based on combined fractionation and modification strategies (e.g. physical treatment, enzyme/fermentation technologies, membrane technology, among others). Ultimately, the results of SPRINT will help food and pet food manufacturers to meet the growing consumer demand for minimal/less processed food products with improved organoleptic qualities, extended shelf life and enhanced health benefits, and will also help the agri-food industry to develop high value application routes for their industrial co-products. Ultimately, SPRINT contributes to the realization of the total use of resources thereby addressing environmental and societal challenges.</p>
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Results	
Planned results 2019	<p>Orientation & Analysis (9 months) started with the identification of ingredient functionality requirements and the definition of commercial benchmarks. Furthermore the availability and composition of co-products were described and technologies such as super heated steam (SHS), enzymatic modification were evaluated for modification and fractionation. Furthermore, bioactivity of potato protein was determined. In addition, kick-off, and year end consortium meeting/workshop was made where partners interacted closely with each other along with WFBR experts</p>
Achieved results 2019	<p>The planned results above are in line with the scheduled/envisioned activities for this stage of the project. The planned results for 2019 were achieved. Mainly this means that a working plan and strategy on how to functionalize the various co-products in the project have been defined. In addition to the achieving the planned results in 2019. Screening of technology and functionality was also started in 2019. In the original plan, the screening will be started in 2020 (year 2).</p>
Planned results 2020	<p>Phase 2. Tool development (15 months) continues with production of complex ingredients from co-products on lab-scale and testing their technical and/or health functionality in food and pet food model systems. By understanding the underlying phenomena on molecular or microscale, innovations can be made on product and process level. In a re-iterative approach the functionality and cost-efficiency are optimized. Tools foreseen for the food and pet food manufacturer includes methods to quantify ingredient functionality in food models and link functionality in food model to physico-chemical properties of ingredients and ingredients mixtures. Furthermore, blending strategies for co-products to improve functionality will be developed. Tools foreseen for the agri-food industry include development of mathematical models and design of biorefinery processes to maintain high levels of functionality while maintaining a natural and clean label ingredient. Tools to improve the functionality of highly diluted co-products (e.g. selection of water removal and demineralisation technologies, and tools for describing viscosity and</p>

	osmotic pressure behaviour of biomolecules) will be developed. In addition, natural and mild treatments for the modification of co-products based on physical processes (concentration, size reduction, treatment with combined control of water activity, pressure, among others) will be identified. Available screening tools especially in relation to health functionalities will be utilized as a method to assess changes in health and technological functionality as affected by biorefinery.
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Deliverables/products in 2019 (provide the titles and /or a brief description of the products/deliverables or a link to a website.)	
<u>Scientific articles:</u>	
none	
<u>External reports:</u>	
none	
<u>Articles in professional journals/magazines:</u>	
none	
<u>(Poster) presentations at workshops, seminars, or symposia.</u>	
none	
<u>TV/ radio / social media / newspaper:</u>	
none	
<u>Remaining deliverables (techniques, devices, methods, etc.):</u>	
<p>In 2019, the main deliverable of the project is to define a way of working and approach for functionalizing side-streams. In 2019, literature review, development of analytical methods that will be used for functionalization, inventory of clean label technologies were made.</p> <p>The first year of the project focused on orientation and analysis of the required functionalities for specific end products. These were identified together with the partners.</p> <p>In 2019, initial screening for the biofunctionality of potato protein were made. Promising results were obtained.</p> <p>Additionally, evaluation of processing technologies such as super heated steam (SHS) and enzymatic modification and their combinations were made. Oat hull, Potato peel and Potato fiber were subjected to SHS. The changes in functionality and the sugar composition of the solubilized material have been characterized.</p> <p>Additionally, work on valorization of co-products from the dairy industry has started using fermentation to achieves specific technical functionality (e.g. thickening, taste enhancing, among others).</p>	

A mid-year and an end year consortium meeting was held on top of monthly meetings. The consortium partners are very much involved and active in the PPS SPRINT.