

Enabling protein CONcentrates for EXTrusion

Publieke samenvatting / Public summary

Aanleiding

The production of highly purified plant-based protein ingredients is currently an energy-intensive process, primarily due to the reliance on wet fractionation. This process requires the addition of large amounts of water, which is later removed by (spray) drying. This leads to high energy consumption and a significant carbon footprint and GHG emissions. Dry fractionation processes result in protein ingredients with approximately 87% lower GHG emissions. However, several technological and sensory challenges limit the application of these ingredients in food products to its full potential. The challenges include inherently poorer powder handling properties, enrichment of off-flavours and different functionality. The ECONEXT project is motivated by the potential of dry fractionation as a more way of producing plant-based protein ingredients. Therefore, the partners in ECONEXT join forces to solve the challenges that currently exist along the value chain to unlock this potential.

Doelstelling

The objective of the ECONEXT project is to develop science-based strategies to enable dry fractionation to become the dominant processing technology for the production of plant-based protein ingredients. Thereby, the project aims at producing sustainable, healthy, attractive, tasty, and affordable plant-based meat analogues. Hence, the contribution to energy reduction is threefold, a shift from protein isolates produced by wet processing to dry fractionated protein concentrates, the protein transition from animal to plant-based proteins, and the transition from (largely) imported wet-

Projectinformatie / Project information

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Subsidiebedrag / Grant amount

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Algemene informatie / General information

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ISPT

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fractionated ingredients like soy to dry-fractionated concentrates from crops grown in The Netherlands and Europe (e.g. yellow pea and faba bean).

Korte omschrijving

The project focuses on (1) to develop processing technologies for the production of dry-fractionated protein concentrates that are easily applicable in plant-based meat analogues, and (2) using crops that can be grown in The Netherlands (yellow pea and faba bean) instead of crops that must be imported like soy beans. The use of dry-fractionated protein concentrates comes with several challenges, such as processability and sensory quality.

Processability issues include the poor flowability of the protein concentrate powders and low viscosity of the protein dispersion, which prevent the dispersions from being texturized into a nice fibrous meat analogue structure via high-moisture extrusion. Furthermore, protein concentrates contain less protein and more other compounds, such as starch, fibres, and polyphenols, which can affect the flavour, texture, and nutritional value of the meat analogues. (3) In this project, science-based strategies will be developed to overcome these challenges, and, thereby contributing to the reduction of industrial energy use.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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