



Plant Meat Matters

Public Private Partnership
'Towards a Next Generation Meat Analogues'



WAGENINGEN
UNIVERSITY & RESEARCH

Plant Meat Matters will build the required scientific basis to understand the structuring process of meat analogues while including flavour components, fat and other ingredients. Together with partners that span the entire vegetable protein chain, this basis will be used to further develop technologies for making the next generation of consumer-accepted meat analogues with improved characteristics that can be produced more cost-effectively and will have reduced environmental impact compared to meat analogues currently available on the market.



Background

The high and increasing consumption of products from animal origin is one of the key factors causing current routes for food production to be insufficiently efficient to feed the growing, and more affluent world population. Meat production is inefficient with respect to the use of land, water and raw materials. In addition, there is an increasing resistance against the meat industry in the Western world on for example animal welfare grounds.

Nutritionally, peas or soy would be excellent protein sources, but most consumers prefer meat. The fact that meat is a product that is fibrous on various length scales including the nanometre scale, is for a major part responsible for this: the flavour components are gradually released upon chewing, giving a good taste experience during the complete duration of mastication.

A route to reduce the consumption of these products is the development of plant-based analogues for meat or meat-like products. Consumer sciences have indicated that products that resemble the original will most likely have the highest chance of success to be picked up by the broadest range of consumer groups.

Recently, Wageningen University & Research and the Technical University of Delft have jointly developed a novel technology for the production of fibrous, plant-based materials on nano to meso scale, resembling the structure and bite of meat better than commercial products that are currently available to consumers. This fibrous material could therefore form the basis of the next generation of meat analogues.

Vision and ambition

Plant Meat Matters has the following vision and ambition towards a next generation of meat analogues:

- Reduced consumption of products from animal origin is a key step towards a sustainable diet, and can be achieved by direct replacement by textured plant-based products
- Ingredients necessary for meat analogues can be produced with higher efficiency, and reduced use of energy, water and chemicals when focussing on the right ingredients for meat analogues rather than on pure ingredients
- Producing less waste by production of meat analogues is possible by keeping food fresh for longer and on demand production of meat analogues

Project objectives

- Improve scientific basis for next generation meat analogues
 - Product quality: water binding, fat, flavours, etc.
 - Ingredient flexibility & possibilities for processing
- Further development of technologies and ingredients for meat analogues
 - Consumer-accepted and improved characteristics
 - Cost-effective process with reduced environmental impact
- Enable partners to develop and produce better meat analogues, ingredients, flavouring and equipment

Project structure

The project is divided into 8 work packages. The work packages indicated in blue focus on bridging the technology gap and build on background knowledge and results from the 6 other work packages.

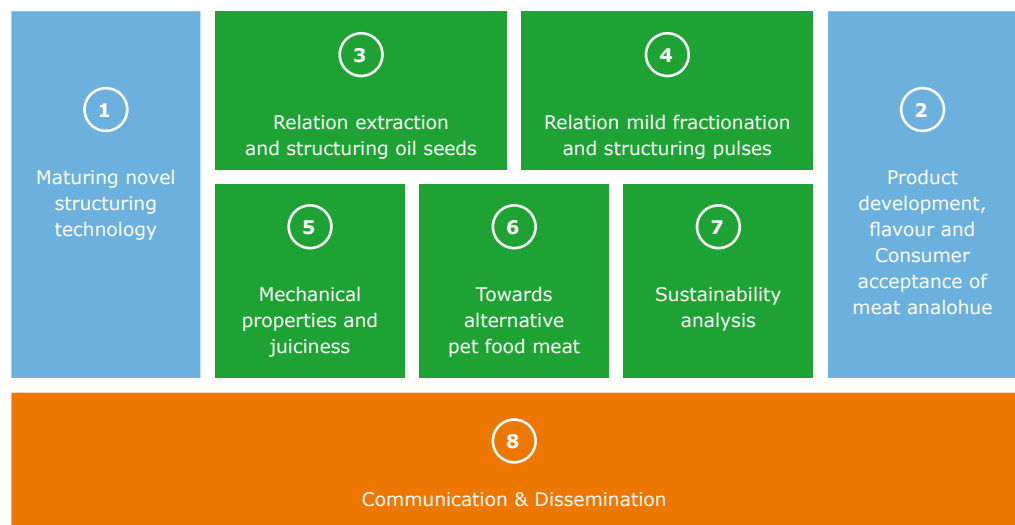
- WP 1 Upscaling and maturing shear cell technology;
- WP 2 Developing meat analogue products with excellent taste and texture and investigating consumer acceptance of those products.

The green work packages focus on understanding the structuring process:

- WP 3 Understanding the structuring potential of oilseeds, which includes the effect of fractionation;
- WP 4 Investigating the structuring potential of protein concentrates and isolates from pulses and beans, including the effect of mild fractionation;
- WP 5 Understanding mechanical properties, juiciness and flavour release of structured protein systems;
- WP 6 Towards the development of plant-based alternatives for meat-derived ingredients in pet food;
- WP 7 A sustainability analysis of various alternatives for meat.

The orange work package focusses on knowledge transfer:

- WP 8 Communication and Dissemination



Consortium partners

Partner	Location	Role
Meyn Food Processing Technology	Oostzaan, The Netherlands	Technology supplier
Avril	Paris, France	Ingredient supplier
Ingredion	Hamburg, Germany	Ingredient supplier
Givaudan	Naarden, The Netherlands	Flavour components
saturn petcare	Bremen, Germany	Application to pet food
Nutrition & Santé SAS	Revel, France	Application to meat analogues
De Vegetarische Slager	's-Gravenhage, The Netherlands	Application to meat analogues
Unilever R&D Vlaardingen	Vlaardingen, The Netherlands	Application to meat analogues
Wageningen University & Research, Food Process Engineering	Wageningen, The Netherlands	Knowledge organisation
Wageningen Food & Biobased Research	Wageningen, The Netherlands	Knowledge organisation

Project information

Plant Meat Matters is co-financed by the Top Consortium for Knowledge and Innovation 'Agri & Food' by the Dutch Ministry of Economic Affairs. The project is registered under contract number TKI-AF-16011

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