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**New Ingredients for Meat Products and Meat Analogues (#658)**

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**Short Abstract**

The food industry in general and the meat industry in particular are facing global challenges such as scarce resources, a growing population and changing dietary habits and trends.

An increasing world population with estimated 10 billion people in 2050 demand sustainable and healthy nutrition. Technologies, ingredients and food systems to tackle this challenge have to be developed on time. For instance, the competition between feed, food or energy crop production needs to be solved in order to make sustainable use of all available value streams in the primary and secondary production chain.

On the other side, people are suffering from malnutrition such as obesity, hypertension or diabetes. (Mal)nutrition-related diseases count for a large number of deaths worldwide which could be avoided by better availability, quality and acceptance of healthier foods with reduced fat, sodium or sugar content.

At Fraunhofer IVV we are working since a long time with innovative ingredients that have a high functionality, a high nutritional value or improved acceptance by the consumer. These ingredients are mainly plant based proteins, dietary fibers or secondary plant substances. Based on these ingredients new product concepts and reformulated products are developed to meet consumer demands in terms of nutritional requirements and sensory acceptance. Our goal is to combat food-borne diseases and disorders by using value-adding and sustainable ingredients such as plant proteins or dietary fibers in foods, and by reducing salt, saturated fats and sugars.

In my presentation, I will show exemplary how plant based ingredients may be used in meat products or meat alternative products. The following examples will be presented:

- Use of plant based protein ingredients as fat replacer in meat products:

Fraunhofer has developed a process for production and providing a new type of innovative fat replacer based on proteins from different legume sources. Key properties of these ingredients are a globular structure mimicking emulsified fat bubbles, showing a so-called micellar structure. The plant based fat replacer can be incorporated in meat products such as spreadable or boiled sausages showing improved mouth feel and structure. A fat reduction of 30% is therefore possible without impairment of product quality or acceptance.

- Strategies and innovative ingredients for sodium and nitrite reduction in sausages

Salt plays an important role in meat products. In sausage products it is used, besides its taste properties, for conservation, color preserving, texture stabilization, water binding and the protein solution effect. However, numerous efforts are ongoing targeting the reduction of sodium in foods to meet recommendations of WHO. In my presentation I will show the results of a research project targeting salt reduction in meat products by incorporation of innovative natural ingredients stimulating trigeminal senses, mimicking salt-congruent flavors or boosting salty taste. On this way, salt content in sausage products could be successfully reduced up to 30%.

- Development of plant based meat alternatives such as meat analogues or vegan burger products mimicking structure, mouthfeel and taste of classic meat products, targeted to flexitarian consumers

There is a big demand in alternative products to meat, meeting consumers demands for more sustainable, more ethical-correct and healthy nutrition. Classical meat alternatives from generation one such as Tofu or Tempeh are lacking in structure, mouth feel and fiberness and show thus only limited consumer acceptance. New processes such as high moisture extrusion technology providing fibrous structures or new ingredients based on pea protein or dietary fibers led to new-generation meat alternatives showing very close-to-meat properties. Most prominent example therefore is the "Beyond-Burger". Target consumer group for these products are flexitarians. In my presentation I will show an overview on current processes and ingredients for meat alternative products and give an outlook on further trends within this sector.

- Plant based ingredients providing antimicrobial and / or antioxidant properties in meat products

Quality and product safety of meat products is crucial for consumer acceptance and trust. On the one side, long shelf life is desired by producers, retail and consumers, on the other side the consumer seeks for clean-labelled products without added conserving agents or E-numbers. At Fraunhofer IVV, various research activities and projects have been carried out to identify and characterize plant based substances such as plant extracts, spices or herbs regarding their antimicrobial and antioxidant properties. Some of them show excellent activities, and are promising ingredients to be used in meat or meat alternative properties. Challenge is to match functionality and applicability

**Notes**

in specific products, since the ingredients often also show significant flavor properties. In my presentation I will show examples of promising ingredients showing good functionality and sensorial profile to be used in meat products.

## Notes