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Requirements for Canola / Rapeseed Proteins for Use in Food and Feed

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Rapeseed proteins show an extensive potential for use in food and as a source of protein in feed, e.g. for aquafeeding. Previous efforts for a marketable supply of rapeseed proteins were not successful and the literature describes numerous technologies for processing and applications of rapeseed proteins.

The main storage proteins Cruciferin and Napin contained in the seed differ substantially in molecular size, chemical and physical properties. These differences place special demands on the recovery of the proteins and allow a diverse range of variants in terms of protein content, protein composition, techno-functionality and sensory properties. An essential prerequisite for the implementation of rape protein processes are low process costs and a sustainable use of the by-products.

Different extraction methods for protein recovery of rapeseed proteins are compared in view of current plant breeding efforts to improve applications of rapeseed proteins for food products and for use in fish feeding.

Specific properties of protein samples for targeted functional applications can be achieved by selecting technological methods and setting selected operating parameters for protein recovery. Cruciferin with a purity > 90% can be prepared with a simple extraction/ precipitation method and with membrane filtration can get an isolate with a Napin content of > 65%, both can be described by techno-functionality and organoleptic tests, e.g. taste. For cruciferin, anti-nutritive ingredients such as glucosinolates and sinapinic acid can be technologically reduced, which is of particular advantage for aqua-feeding. In addition, a certain kaempferol molecule was identified as the cause of the bitter taste of cruciferin.

The presentation shows examples of different technological-technical processes for production of rapeseed protein and explaines the various techno-functional and organoleptic characters. Modification techniques improve techno-functional properties such as cruciferin solubility and the efficiency of the extraction process by increasing the yield of the protein samples.