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Influence of extrusion processing on the functional properties of chokeberry pomace

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There is ever growing interest of consumers on a healthy and sustainable diet. Therefore, food producers endeavor to design foods with sustainable and health-promoting character. One promising way to achieve this goal is the addition of dietary fibers (DF) or phytochemicals into food products, as many studies has already shown that the consumption of DF and phytochemicals may lower the risk for contract cancer, coronary heart diseases, diabetes type 2 and obesity. Especially, the by-products from fruit and vegetable production has recently gained an increasing attention because of their high fiber and bioactive content, availability, low cost, and sustainable value.
However, addition of these by-products into food products is quite challenging, as they often affect the food properties and performance negatively. To deal with this challenge, the food by-products can be subjected to chemical and/thermomechanical modifications improving their functionality.
Above others, extrusion can be used to improve the functional properties, such as solubility, water absorption, gelling and thickening properties of food by-products. However, the treatment leading to modification of cell-wall polymers can often also result in loss of phytochemicals having potential health-promoting properties. Therefore, improved understanding and control of the process is essential. In this study, we investigate the influence of extrusion conditions as well as the influence of defined thermomechanical treatment on the functional properties of chokeberry (*Aronia melanocarpa)* pomace and the retention of health-promoting compounds therein. Extrusion experiments are performed by a lab-scale twin-screw extruder, whereas the defined thermomechanical treatment is realized by a model process system called closed cavity rheometer.
In this contribution, we will present decisive process parameters and their relation to the retention of polyphenol content and the modification of cell-wall polymers during extrusion. Furthermore, we will discuss the applicability of the process to ready-to-eat cereals with respect to improve the final product characteristics.