

RESEARCH PROJECT



Food by-product valorization: Analysis of phytochemicals, assessment of the accessibility and microbial metabolism (PhytoFoodTec – PhytoAccess)

Partenaire(s) HES-SO thematic programme HealthFood,
Haute Ecole d'ingénierie et d'architecture de Fribourg (HEIA-FR)

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Description

Objective of the PhytoFoodTec project is to prevent waste, to put food by-products (FBP) back into the food chain and to assess the functionality of processed FBP, the accessibility of bioactives from processed FBP and the influence of processed FBP on the microbiome. Accessibility of phytochemicals is pertinent from a nutritional point of view and these compounds are often metabolically activated during gut passage.

To establish the tools for PhytoFoodTec project, especially the analytical tools, work on flaxseed oil cake as a FBP and on original flaxseed will be performed. The accessibility of phytochemicals from FBP and from transformed material will be evaluated before and after digestion and microbial conversion with adapted and existing methods and with newly developed sample preparation techniques devoted to flaxseed.

The phytochemicals analysis will be performed with established and for flaxseed adapted liquid chromatographic and photometric methods. Individual polyphenols, total polyphenols, antioxidant capacity (different methods) will be analyzed to characterize the original, transformed and metabolized material best possible. To identify metabolites, LC-MS methods will be applied.

The presence of variable matrix compounds, in the case of microbial digest also the presence of microorganisms will be challenging in this project. An appropriate and correct sample preparation for the analysis is mandatory to obtain meaningful results concerning phytochemicals and their metabolites.

Until now, knowledge on the effect of technological transformation of FBP on the accessibility of phytochemicals is scarce. Accessibility is a prerequisite for an intestinal absorption or an intestinal activation by microorganisms. In addition, the microbial transformation has not been investigated extensively. A targeted technological transformation of the FBP might lead to a product to be recycled into the food chain and which has an increased biological activity and nutritional value.

URL <Http://??>

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