Next generation textured foodstuff

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With a growing need to produce more sustainable protein rich food comes an imperative for better understanding of how we can efficiently extract plant proteins and tailor them to generate food with an appealing texture. In this project we are aiming to use the stabilizing abilities of Protein nanofibrils (PNFs) together with non-fibrillar protein to create a matrix that we hypothesize will exert control over the foodstuff texture. The PNF were made from faba bean and mung bean protein.

In this study, we evaluated how the PNFs influenced the texture when added to films and gels. The nanofibrils were evaluated by AFM, ThioflavinT (Th-T) assay and UV-CD. The mung bean PNFs were investigated during the fibrillation process at different concentrations and incubation times. Results from the Th-T assay and UV-CD indicate that the optimal conditions for mung bean fibrillation is a protein concentration of 10mg/ml at 24 h heat incubation.

Films were generated with a combination of glycerol plasticizer, faba bean or mung bean protein, and faba bean or mung bean PNFs with an increasing concentration ratio. The mechanical properties of the films were investigated by using a tensile tester. Preliminary results indicate that the tensile properties of films made with mung bean protein were improved when nanofibrils were incorporated.

Initial gelation studies on faba bean protein have been made at two different pH. We are currently investigating how addition of PNFs to the gel are affecting the rheological properties.

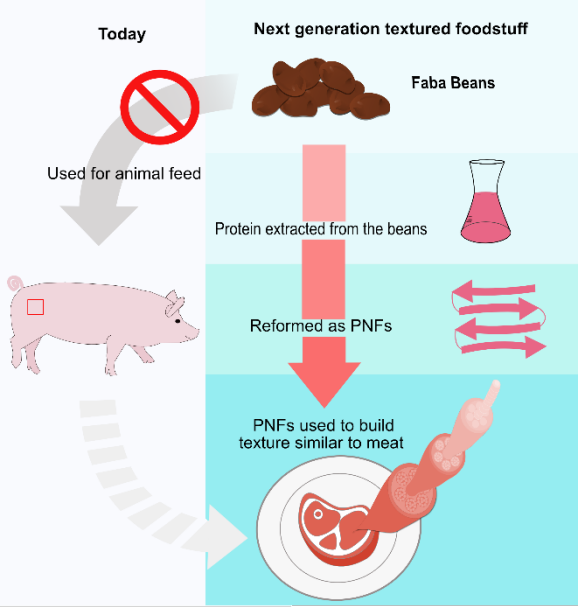

Figure 1. Schematic overview of the project were the goal is to create a new textured foodstuff.