

Projektförslag för kandidatarbete inom inst. för kemi och kemiteknik och biologi och bioteknik

Development of plant-based dairy analogues from Swedish pea proteins

Bakgrund

To meet both climate goals and consumers health demands, the food system should redesign its traditional supply chains. It should establish resource efficient value chains starting with locally produced crops and ending with appealing plant-based foods. Locally produced legumes such as peas which are adapted to the Swedish climate can play a central and critical role here. The current picture is, however, in contrast with these needs. Only 1 percent of protein intake in Sweden comes from legumes and almost all the peas farmed in Sweden goes to feed. This calls for urgent actions to shift the Swedish pea value chain from animal feed to sustainable and healthy source of proteins.

Several initiatives in Sweden are trying to extract protein from Swedish peas for development of different plant-based food products and their replacement with animal proteins to mitigate the climate impact of conventional animal-based products. Two main approaches here are including dry fractionation and wet fractionation processing. The former is a mild process but results in less purified protein ingredient called pea protein concentrate. The latter approach is called wet fractionation which result in high purity protein or protein isolate but requires chemical processing. Protein isolates are more widely accepted by the food industry due to their higher protein purity but they do not always provide a better sensorial properties of functionality compared with the concentrates. This bachelor project is aiming to explore which of these two types of ingredients (protein concentrate vs protein isolate) produced from Swedish yellow peas fits best for development of dairy analogues and if high purification is really needed or not. Secondly, how the type of dairy analogues such as cheese, yogurt and ice cream would affect the required type of ingredient and their acceptability.

Problembeskrivning

This project has the following aims:

1. Explore with type of protein ingredient recovered from Swedish peas suit most in the development of dairy analogues
2. Understand how the type of dairy analogue will affect the required level of purity in the yellow pea ingredient.

Genomförande /Viktiga moment/teknikinnehåll

1. Extraction of pea protein concentrate and isolate from Swedish yellow pea
2. developing and optimizing 2-3 prototypes of the selected dairy analogues (cheese, yogurt and ice cream) using the two ingredients.
3. examining the quality and acceptability of the developed products in terms of nutritional value as well as their color, rheology texture and sensorial properties.

Speciella förkunskapskrav: Being creative and curious about plant-based food and improving food sustainability.

Möjlig målgrupp: Bioteknik, Bt, Kemiteknik, K och Kemiteknik med fysik,

Gruppstorlek: 4-6 studenter

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