

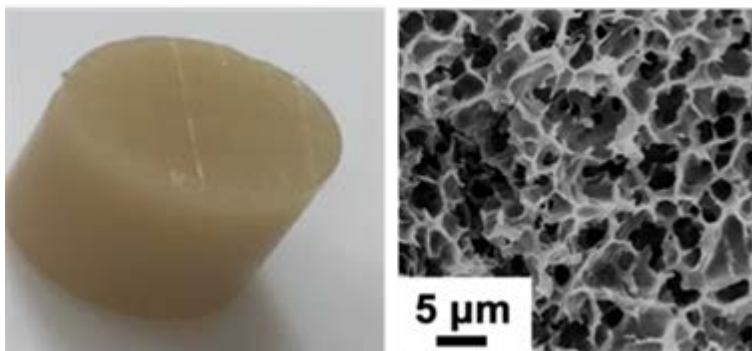
Clean Resources

Smart Agriculture and Food

FUNDING DETAILS

Development of Innovative Plant Protein-Based Gelling Ingredients for Food Applications

As the global population keeps increasing, so does the demand for protein-rich foods. It is forecasted that animal-based proteins and products will be insufficient to meet the protein demands of a projected population of nine billion in 2050. Pulses are a good source of protein (20-30%) with high nutritive value. However, their wide application as protein ingredients in food products has been hindered by their less desirable texture. Using peas and lentils grown in Alberta and Western Canada, the project team is developing gelling ingredients from pulse proteins that replicate the texture and sensory properties of meat products for use in the manufacture of protein-rich foods. The global market for pulse-based proteins is expanding, resulting in increased production and higher profit competitiveness for Alberta's pulse sector.



RECIPIENT:

University of Alberta

PI: Dr. Lingyun Chen



PARTNERS:

Alpha Foods



TOTAL BUDGET:

\$261,999



AI FUNDING:

\$149,999



PROJECT DATES:

March 2019 -
February 2022
(Extended)



PROJECT TRL:

Start: 3
End: 6

APPLICATION

The project aims to develop new pulse-based protein gelling ingredients that can be used to improve the texture and sensory quality of protein-rich foods. It will also improve a pre-texturization technique that has been commercialized for dairy proteins and not yet applied in pulse proteins. As the technique does not use chemical reagents or enzymes, food processors will be able to incorporate it in their production line to generate high-value ingredients and protein products labelled as "natural," vegetarian and vegan.



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PROJECT GOALS

- Investigate the gelling properties of pea and lentil protein to develop new gelling ingredients that will allow manufacturing of protein-rich foods with desirable structure and sensory quality.
- Develop plant protein gels of improved strength by pre-texturization and protein-polysaccharide complexing that can provide appropriate food texture.
- Scale up the technique at pilot level to develop two food prototypes incorporating the developed protein ingredients and evaluate the food quality.

BENEFITS TO ALBERTA

- Development of high-value gelling ingredients from Alberta crops will provide a new market opportunity for specific value-added applications.
- Project will result in new high-value ingredients and protein products using vegetarian and vegan ingredients with desirable sensory and quality attributes.
- Increasing the consumption of pulse-based protein can reduce health issues associated with cholesterol and saturated fats, which will contribute towards improving overall nutrition and health of Albertans.



6 Publications



2 Students Trained



1 Patent



2 Project Jobs



2 New Products/Services



1 Spinoff Company

CURRENT STATUS

April 2021

The team has successfully improved pea-protein gelling properties to achieve a strength superior to soy protein gels (which are the most common plant-based proteins) and comparable to strength of egg white gel. They have also successfully improved the gel strength of lentil proteins at earlier stages of the texturization process. Planned activities to scale up the techniques and develop two food prototypes are delayed due to the COVID-19 pandemic.