

NEW DIRECTIONS FOR PULSE-BASED PROTEIN

Substituting pulse ingredients for animal-based ingredients can achieve similar performance in some food applications, but will greatly improve nutrition.

From a bigger presence in grocery stores, to rising profile in restaurants, 2019 felt like the year that plant-based protein finally cracked public awareness. Which products and brands will make the most impact? That's tough to say, but as Dr. Lingyun Chen sees it, there's little doubt that more innovative products are on the way.

"Plant protein is a hot topic at technical and scientific conferences around the world," said Chen, Professor and Canada Research Chair at the University of Alberta. "Several key trends are driving research: meat analogs, dairy replacements and using plant protein ingredients in drink products."

With funding support from APG and others, Chen and her team are hot on the trail of new ideas that can increase demand for pulses and pulse ingredients, ultimately building new revenue opportunities for growers. Two years ago, for example, she wrapped up development of a faba bean-based concentrate ranging from 60% protein (with a dry process) to 85% protein (with a wet process). That's a breakthrough with many potential food processing applications.

In 2019, Chen's focus was mainly on three plant protein-related areas, with all showing good progress.

Stronger, more nutritious gels.
The ability of ingredients to form a

gel is critical for the food processing industry. Egg white is a traditional gelling agent. Soy also has good gelling qualities, but Chen believes that industry would be open to a gel that is not animal-based and not soy. Peas look promising.

"We've found that pea protein is comparable to egg white to form good gels," Chen said. "Plant proteins normally need a higher temperature than egg white to form gels. We've been looking at lowering the gelation temperature and it's been going very well. Pea protein modified by a physical approach can form a gel with good mechanical strength, that's stronger than soy and might even be comparable to egg whites."

Dairy replacements. Products like coffee cream and ice cream are staples in the supermarket. For reasons of dairy sensitivity or personal choice, some consumers would prefer the same product experience without consuming dairy. Chen believes she can help them.

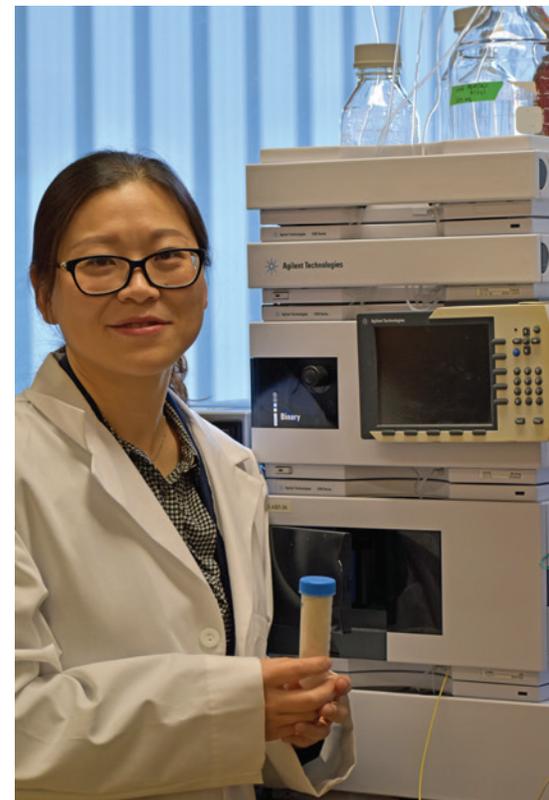
"We have a graduate student who's been working on identifying a new form of lentil protein aggregate," she said. "The goal is to make a stable emulsion with the right texture and feeling in the mouth. This could replace dairy in products such as ice cream and salad dressing and could even replace eggs in mayonnaise."

A protein kick for oat-based drinks.

These products are getting well-established among consumers who want a nutritional edge. Even so, oat-based drinks could be even healthier if pulse protein was part of the recipe. Chen is currently working to optimize such a formulation and notes that a pulse/oats tandem could deliver nutritional synergies that are superior to consuming each individually.

Looking ahead to 2020, Chen sees consumers poised to accept more plant-based protein in their diets. Her aim is to make sure that prairie-grown pulses are a big part of this movement.

"There's a lot of diversity in what's possible with pulses," Chen said. "To mimic animal-based ingredients with pulse ingredients results in less fat, higher protein and high dietary fibre. These are pulse-based products that can help change the Canadian diet for the better."



Dr. Lingyun Chen, Professor and Canada Research Chair at University of Alberta.