

## Modification of a commercial lentil, pea and faba bean protein isolate production process for improved flavour profiles

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Co-funders	Total Project Cost
\$115,000.00	Completed	November 2015 – December 2019	Saskatchewan Ministry of Agriculture – Agriculture Development Fund (ADF)	\$230,000.00

### Project Description

To develop a commercial-ready process for producing a bland tasting pea and lentil protein isolate by spray drying, with functional properties that enable the protein to compete against other plant protein ingredients on the market and can be incorporated effectively into food products.

### Outcome

Changes of flavour profiles in lentil protein isolate (LPI) in response to organic solvent treatments (acetone, ethanol, and isopropanol; 35-95% v/v), and the resulting impacts on the isolate colour and physicochemical and functional attributes were observed. Aldehydes were the major volatile compounds in the untreated LPI. Acetone treatment greatly raised ketones by 80%. In contrast, ethanol and isopropanol treatments (75% v/v) produced high quality off-flavour-reduced LPIs which may be used in various food systems. The alcohol treatments also showed slightly lower solubility but improved surface hydrophobicity to produce emulsions with a similar stability as compared with the untreated LPI. Similar effects were seen for pea.

Product prototypes, including protein bars, protein-based beverages and salad dressing were produced at the SK. Food Industry Development Centre. Recommended LPI usages include 25% in protein bars, 10% in beverages and 3% in dressings. Overall, flavours were positive in these products. Lentil-based ingredients had better flavour (no off-flavours) than pea.

### Research Objective

#### OBJECTIVE 1

To develop a commercial-ready process for producing a bland tasting pea and lentil protein isolate by spray drying, with functional properties that enable the protein to compete against other plant protein ingredients on the market and can be incorporated effectively into food products.