

## Development of pre-packaged pulse-based meals to ameliorate the negative health consequences of sedentary behaviour

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Co-funders	Total Project Cost
\$156,543.75	Completed	March 2018 – March 2021	Saskatchewan Ministry of Agriculture – Agriculture Development Fund (ADF); Loblaws	\$442,668.75

### Project Description

The research team developed a pulse-based recipe book with meals containing lentils, chickpeas, peas, and beans. In the previous study the team showed that meals prepared from the cookbook were effective for reducing risk factors such as high blood pressure and high cholesterol levels in women who were at risk for cardiovascular disease. The meals were prepared in a research kitchen for research participants.

People are aware that pulse-based meals are healthy, but major barriers to pulse consumption are that people do not know how to prepare pulse-based meals, and do not have time for meal preparation. The current research is attempting to overcome these barriers by developing pre packaged, ready-to-eat pulse-based meals, based on the recipe book.

Ten pre-packaged meals have been developed in collaboration with the Saskatchewan Food Industry Development Centre. These meals include three salads, three soups, chili, chana masala, tagine, and pilaf containing lentils, chickpeas, or split peas. The meals are currently being evaluated for taste preference in 200 consumers. The top seven meals will be tested in a clinical trial of 100 office workers who will replace their regular work-day lunches and snacks with these pulse-based meals. The effect of consuming these meals for 2-months for reducing blood sugar and cholesterol levels, improving body composition, and reducing blood pressure will be evaluated. Hopefully, the health and consumer preference evidence will support the inclusion of these pre-packaged meals on grocery store shelves.

### Outcome

Seven pre-packaged meals that can easily be incorporated into lunches of office workers were developed and evaluated for consumer preference and their health benefits in a clinical trial of office workers who replaced their regular work-day lunches and snacks with pulse-based meals.

When participants in the study were evaluated for their preferred pulse-based meals during the 2-months of consumption, they rated the meals in the following order (from most preferred to least preferred): Vegetable Chickpea Chili, Chickpea Minestrone soup, Apricot Chickpea Salad, Date Lentil Tagine, Barley Lentil Soup, Lentil Quinoa Salad, Split Pea and Barley Pilaf.

The meals were effective for improving body composition and blood cholesterol levels in these workers. For body composition, the pulse-diet resulted in an approximate 1% decrease in percent body fat compared to the regular diet. For cholesterol levels, the ratio of “bad” cholesterol (low-density lipoproteins) to “good” cholesterol (high-density lipoproteins) decreased by 6% on the pulse-based diet compared to an increase of 5% while on the regular diet. The ratio of total cholesterol to “good” cholesterol (high-density lipoproteins) decreased by 4% while on the pulse-based diet compared to an increase of 3% while on the regular diet.

### Research Objective

#### OBJECTIVE 1

To develop pre-packaged pulse-based snacks/meals for easy/convenient consumer use.

#### OBJECTIVE 2

To conduct consumer sensory evaluations on the pre-packaged pulse-based snacks/meals developed in objective 1.

#### OBJECTIVE 3

To use the pre-packaged foods from objective 2 in a clinical trial to improve metabolic health in office workers.