

Developing Frozen, Microwaveable Side Dishes with Pulses and Soybeans



A frozen side dish made with a 1:1 ratio of pulses and soybeans to vegetables.

Processing techniques were developed to include dry beans and soybeans in individual quick-frozen applications and two frozen, microwaveable side dishes were successfully developed with an equal proportion of beans to vegetables.

CONSUMERS LOOK FOR quick foods that are healthy and flavourful. Currently, many frozen and microwaveable meal options only contain small proportions of pulses.

The objective of this research was to produce two gluten-free frozen, microwaveable side dishes with a 1:1 ratio of pulses and soybeans to vegetables.

From 2011 to 2013, optimal processing procedures were investigated to include pulses and soybeans in frozen microwaveable products while maintaining end quality and reducing oligosaccharides,

which influence flatulence. Conventional soybeans and pinto, navy, black, kidney and cranberry beans were evaluated.

It is more common for soybeans to be highly processed into products like soy milk instead of minimally processed individual quick frozen (IQF) applications that utilize the whole bean. IQF requires hydration, cooking, freezing and packaging.

In this research, an IQF process was developed for beans that maintained quality, texture, appearance and flavour, and reduced oligosaccharides.

No processing aids were used which increases market opportunity with a “cleaner” label. This process can be adapted and utilized by the industry.

Two prototypes of frozen, microwaveable side dishes combining pulses, soybeans and vegetables were developed. When taste-tested, these dishes were flavourful and well-liked. There is potential to increase the proportion of dry beans and soybeans within IQF dishes to position these crops more favourably in the processed food industry. ▀

PRINCIPAL INVESTIGATOR Janice Meseyton, Food Development Centre

MPSG INVESTMENT \$14,900

DURATION 2 years

Developing a Soybean Saskatoon Berry Smoothie

A soy-saskatoon berry smoothie was made with Manitoba ingredients that had a smooth texture and a good balance of sweetness, acidity and fruity flavour.

SMOOTHIES ARE TYPICALLY made with fruit and dairy ingredients. Non-dairy smoothies are desirable for those that are lactose intolerant, vegan or those seeking plant-based ingredients. These can be made with soybeans as a dairy replacement while maintaining a rich nutritional profile. Manitoba-grown soybeans and saskatoon berries were used to create a locally sourced, non-dairy smoothie prototype.

Yogurt culture was used in the process of soy milk fermentation to reduce the beany flavour of soy and anti-nutritional factors to increase digestibility. This work

confirmed that regular yogurt culture in combination with other lactic acid bacteria could be used to ferment soymilk into a semi-solid curd without whey separation occurring.

The smoothie was created by blending soy yogurt made from defatted soymilk with juices (saskatoon, sour cherry and black currant), gums, white grape juice concentrate and vitamin mineral premix. The end product was low in saturated fat, high in iron, very high in calcium and a source of fibre.

Ten panelists evaluated the smoothie on sweetness, acidity level, flavour balance,



creaminess and overall acceptability on a 0-4 scale at the Food Development Centre. The soy-saskatoon berry smoothie was described by panelists as having a smooth texture with a good balance of sweetness, acidity level and fruity flavour. ▀

Nutrition Facts		Valeur nutritive	
Amount	% Daily Value	Monteur	% valeur quotidienne
Serving Size 1 cup (250ml) Portion 1 tasse (250ml)			
Calories / Calories	170		
Fat / Lipides	1.5 g		2%
Saturated / saturés 0.5 g			
+ Trans / trans 0 g		3%	
Cholesterol / Cholestérol	0 mg		
Sodium / Sodium	30 mg	1%	
Carbohydrate / Glucides	33 g	11%	
Fibre / Fibres 33 g		12%	
Sugars / Sucres 21 g			
Protein / Protéines	8 g		
Vitamin A / Vitamine A	0%		
Vitamin C / Vitamine C	0%		
Calcium / Calcium	40%		
Iron / Fer	20%		

Ingredients Listing: soymilk, saskatoon berry juice, water, grape juice concentrate, sour cherry juice, inulin, vitamins and minerals (vitamin A, vitamin D2, vitamin B2, calcium lactate, zinc gluconate, maltodextrin), dairy blend (pectin, maltodextrin, guar gum, xanthan gum), black currant juice, natural flavour, culture.

PRINCIPAL INVESTIGATOR Meeling Nivet, Food Development Centre

MPSG INVESTMENT \$23,000

DURATION 2 years