

Enhancing World Markets for Canadian Pulses: Quality and Functionality of Pulse Ingredients

Technical information on pulse ingredients has been communicated to key members of the value chain to demonstrate the quality and functionality of pulses in food products as a result of this research.

PLANT-BASED PROTEINS ARE gaining momentum in the food industry, with growing interest specifically in pulse ingredients. Pulse ingredients derived from crops like peas, dry beans and lentils are low-allergenic and have potential to increase the marketability of plant-based food products. Providing information on the quality and functionality of Canadian pulses can enhance Canada's image as a supplier and improve subsequent demand for our pulse crops.

A series of market-responsive applied research experiments were initiated by the Canadian International Grains Institute (Cigi) to explore the quality, processing and utilization of pulse ingredients. The goal was to communicate the findings of these experiments to key members in the pulse value chain for enhanced marketability opportunities.

Several achievements were made by Cigi throughout the course of this study to advance marketing opportunities for Canadian pulse ingredients. Firstly, research on the standardization of pulse flours has helped several food companies gain a better understanding of pulse ingredients. This means they can incorporate pulses while maintaining the uniformity and consistency of their products.

Other pre-commercialization work demonstrated the successful incorporation of pulse flours into high-quality puffed (i.e., extruded) snacks, crackers and pasta. They found that pulse flours increased protein and total dietary fibre of these foods while maintaining an appealing colour and flavour. In one specific case, Cigi provided these results to a food

company and connected them with a Canadian pulse ingredient supplier to increase the amount of Canadian lentil flour in their formulation, while meeting their product needs.

Pre-milling seed treatments, such as micronization (i.e., infrared heating) and partial germination of pulses, were examined to harness any additional benefits of pulse ingredients. Cigi examined the effects of these treatments on the quality and functionality of end products like pasta and snacks. They found that micronization improved/brightened spaghetti colour but changed certain functional characteristics (e.g., pasting profile, emulsifying capacity). Partial germination of peas had an overall minimal impact on the texture of spaghetti. These findings have since been shared with food processors.

Cigi has also participated in several investigative missions to assess the

opportunities for Canadian pulses as ingredients in international markets. Numerous contacts have been made with food processors in Mexico, who are now interested in adding Canadian pulses to their products.

Technical information can be drawn from this research to support value-added initiatives like secondary processing, support plant breeding efforts and promote Canadian pulses in domestic and international markets. For more details on the experiments conducted within this study, visit manitobapulse.ca.

Ongoing research and future goals include a focus on pulses and pulse ingredients in the gluten-free processed food industry. This work is focused on creating nutritionally improved, high-quality gluten-free food products that are desirable to both consumers and manufacturers. ▶



Dried untreated pulse flour spaghetti (top) compared to micronized pulse flour spaghetti (bottom) and a semolina control (centre). Left to right: Spaghetti made with yellow pea, green lentil, red lentil, chickpea and navy bean flour.

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