The Effect of Pulses on the Sensation of Fullness and Food Intake in Children

Adding puréed pulses to a meal does not affect food intake but increases consumption of dietary fibre and protein.

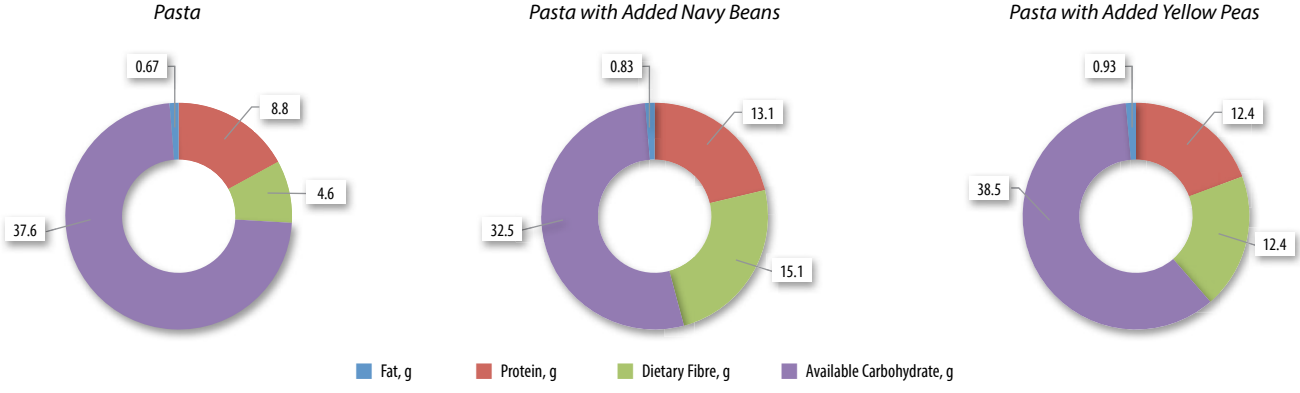
THE INTAKE OF fibre for many Canadian children is suboptimal and protein may also often be lacking, leading to a diet high in carbohydrates and fat. Adding pulses to a meal could increase desired nutrient intake, as well as lower available carbohydrate intake while changing the overall amount of food consumed. This study investigated the effect of adding puréed pulses to a meal on satiation (feeling of fullness during a meal), satiety (feeling of being full after a meal), total food intake and gastrointestinal comfort in children aged nine to 14.

Two hours after eating a standardized breakfast, children fed on one of three pasta dishes: pasta with just tomato sauce (control), pasta with tomato sauce and puréed navy beans or pasta with tomato sauce and puréed yellow peas. Children were asked to eat until they felt comfortably full. At regular time intervals after eating, as well as just before eating the pasta, they filled out questionnaires about their appetite, enjoyment of the food and overall physical comfort. Children were then asked to eat a meal of pizza until they were comfortably full and fill out one final questionnaire.

Adding puréed pulses to the pasta meal did not affect palatability or subsequent food intake at the pizza meal consumed two hours later. There was an increase in the intake of the pasta with added pulses compared to the control pasta, but this did not lead to a higher cumulative food intake over the two-hour period of pasta and pizza consumption. In addition, though there was no difference in total carbohydrate intake, available carbohydrate (starches and sugars) intake was reduced after the intake of pasta with added navy bean. There were also some differences observed regarding subjective appetite and physical comfort ratings. The treatments with added navy beans and yellow peas suppressed desire to eat compared to the control pasta. All participants expressed minimal (<5%) symptoms of gastrointestinal discomfort.

The added puréed pulses provided nutritional benefits to children through increased dietary fibre and protein consumption (see below). Adding puréed navy beans and yellow peas to a mixed meal results in about three to four times higher intake of dietary fibre. While fibre intake is suboptimal or low for many Canadian children, this presents a convenient way to improve nutrient intake. Adding puréed navy beans and yellow peas to a mixed meal also results in approximately 1.5 times higher intake of protein, which could potentially improve the diet of children who have high intake of carbohydrates and fat. Children with a risk of diabetes could also benefit from puréed navy beans, because it was shown to have the lowest level of available carbohydrate intake (sugar + starch).

In order to market puréed pulse products to all potential consumers, the food industry needs to formulate puréed products with acceptable palatability. Due to the success of adding puréed pulses to meals, Dr. Bohdan Luhovyy, in collaboration with Dr. Rebecca Mollard, have initiated a new study investigating the effect of cooked whole navy beans and yellow peas on short-term food intake, satiety and physical comfort in children.



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MPSG INVESTMENT $10,000

DURATION 2 years