

## Investigating Cholesterol Lowering Effects of Edible Bean

**Principal Investigator:** Dr. Alison Duncan

**Institution:** University of Guelph, Guelph, Ont.

**Prepared by:** Nate Ort, M.Sc.

This project, led by Dr. Alison Duncan of the University of Guelph, investigates the effect of edible bean consumption on heart disease risk factors in adults with high blood low-density lipoprotein (LDL) cholesterol.

Edible beans are nutrient-dense with high amounts of dietary fibre, protein, vitamins, and minerals, and low amounts of fat along with a low glycemic index. Previous research has demonstrated that consumption of edible beans is related to a reduced risk of cardiovascular disease (CVD) by reducing total cholesterol and LDL cholesterol, two biomarkers of CVD. Despite this publicly available knowledge, edible bean consumption is low among adults in Canada. The goal of this research is to investigate the effect of edible bean consumption on LDL cholesterol levels in adults.

This research consisted of a four week, multi-centre, randomized crossover study in which over seventy adults with high blood LDL-cholesterol consumed different canned edible beans (black, navy, pinto, red kidney, and white kidney) in 1 cup (250 mL) and 1/2 cup (125 mL) daily amounts compared to 1 cup (250 mL) daily white rice control over four weeks each separated by a four-week wash-out period. Blood samples were collected before and after each treatment. Results showed that total and LDL cholesterol were significantly lower when 1 cup (250 mL) of edible beans were consumed compared to the white rice control. The total and LDL cholesterol were also lower when only a 1/2 cup (125 mL) of edible bean was consumed, but this result was not significantly different from the control. Other lipids and glycemic biomarkers did not differ among the edible bean and white rice control treatments tested. These results provide evidence that consuming multiple types of canned beans protects the human heart and support a practical and feasible strategy to reduce risk of CVD.

This project is on-going, and the investigators are working to determine the effect of consuming edible beans on biological markers in the participants that can help to understand how bean decreases blood cholesterol, including fasting serum and fecal short chain fatty acid profiles, fecal bile acids, and gut microbiota.

## Key Findings

- Total and LDL cholesterol were significantly decreased when 1 cup (250mL) of edible bean was consumed daily over a four week period compared to the white rice control.

## Publication

- [Canned Beans Decrease Serum Total and LDL Cholesterol in Adults with Elevated LDL Cholesterol in a 4-wk Multicenter, Randomized, Crossover Study](#)