The Health Benefits of Pulses
Clinical Trial Findings

DRY BEANS, PEAS, LENTILS, CHICKPEAS

From 2006 to 2008, the Canadian pulse industry initiated seven human clinical trials to look at the connection between eating pulses and the prevention of chronic diseases. The studies revealed a number of positive health benefits in relation to eating pulses and the management of diabetes, heart disease and obesity as summarized below. The seven studies were supported with funding from Agriculture and Agri-Food Canada (AAFC). Three of the studies were co-funded by the Saskatchewan Pulse Growers.

Health benefits of pulses in human clinical trials:

Pulses & Cardiovascular Health

- Reduce total and LDL cholesterol levels
- Reduce blood pressure

Pulses & Weight Management

- Decrease appetite
- Decrease in body weight or body mass index
- Decrease waist circumference or abdominal obesity

Pulses & Diabetes

- Decrease spikes in blood sugar and insulin levels after eating
- Improve insulin resistance

1 Exploring the health benefits associated with daily pulse consumption in individuals with peripheral arterial disease

Principal Investigator: **Peter Zahradka**, PhD, Canadian Centre for Agri-Food Research in Health and Medicine, University of Manitoba

Co-Investigators: Carla Taylor, PhD, Department of Human Nutritional Sciences, University of Manitoba
Randy Guzman, MD, Department of Surgery, St. Boniface General Hospital, University of Manitoba

Researchers from the University of Manitoba found that daily pulse consumption leads to major improvements in blood vessel function in participants with peripheral arterial disease (PAD), a condition in which blood flow (perfusion) to the limbs is reduced. Patients with PAD have hardened and narrowed arteries due to atherosclerotic plaque buildup in the blood vessels of the legs. They experience pain, cramping or numbness when walking. Pulse consumption (½ cup mixed pulses/day for 8 weeks) resulted in significant improvements in arterial function (increased limb perfusion and decreased arterial stiffness). There were no changes in fat hormones or blood pressure. Regular pulse consumption also significantly reduced circulating total and LDL cholesterol levels and the body mass index of study participants (n=26). Study findings also showed that regular pulse consumption increased the intake of dietary fibre, folate, Vitamin C, iron, zinc, potassium and protein over pre-study consumption levels.

2 Pulse consumption and the regulation of food intake, blood glucose and cholesterol levels

Principal Investigator: **G. Harvey Anderson**, PhD, Department of Nutritional Sciences, University of Toronto

Co-Investigators: France Cho, PhD, Anthony Hanley, PhD, Rebecca Mollard, PhD and Bohdan Luhovyy, PhD, Department of Nutritional Sciences, University of Toronto

Dr. Anderson's research demonstrates that eating pulses helps reduce hunger and improves blood sugar (glucose) control when consumed alone or as part of a meal, and that the effects of pulse consumption extend beyond one meal. Normal weight individuals (n=15) eating pulses had lower blood sugar and hunger levels following a later meal. Dr. Anderson also demonstrated that regular consumption of pulses (5 cups per week for 8 weeks) without further dietary advice improved long-term blood sugar control, reduced the amount of food and calories eaten and decreased the waist line and blood pressure of overweight and obese individuals (n=40). Reductions were similar to those seen on an energy-restricted diet achieved through dietary counseling. However, the pulse diet did not have any effect on levels of lipids or markers of inflammation in the blood. The researchers conclude that regular consumption of pulses could lead to reduced risk of diseases associated with excess body weight.

3 The effects of whole and fractionated yellow peas on indices of cardiovascular disease, diabetes and gut health

Principal Investigators: **Peter Jones**, PhD, Richardson Centre for Functional Foods and Nutraceuticals, University of Manitoba
Denis Krause, PhD, Department of Animal Science, University of Manitoba

Co-Investigators: Linda Malcolmson, PhD, Canadian International Grains Institute
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Curtis Rempel, PhD, MBA, Richardson Centre for Functional Foods and Nutraceuticals

Researchers at the Richardson Centre for Functional Foods and Nutraceuticals at the University of Manitoba found that the dietary fibre-rich content of peas helped to regulate insulin management in overweight adults with elevated cholesterol levels (n=23). Participants consuming muffins made with whole pea flour or pea fibre (equivalent to fibre in ½ cup dry yellow peas for 4 weeks) had fasting insulin levels 16% lower than participants consuming control muffins made with wheat flour. They also found that consuming pea fibre significantly decreases insulin resistance by up to 20% compared to control. Insulin resistance, a condition where the body no longer properly uses the insulin it produces, increases

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Pulses contain many heart-healthy nutrients. Pulses are rich in dietary fibre and folate and contain little fat and no saturated fat or cholesterol.

The 2005 Dietary Guidelines for Americans, developed by the USDA, recommend eating three cups of dry beans a week. The USDA defines dry beans to include beans, peas, chickpeas and lentils[1].

References

[1] U.S. Department of Health and Human Services. Dietary Guidelines for Americans. 2005. www.health.gov/DietaryGuidelines/dga2005/document/default.htm.

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