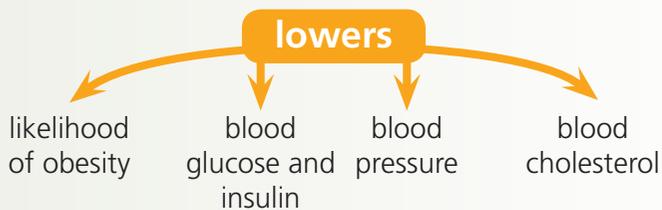


# Pulses and Cardiovascular Disease

## Pulses are a heart healthy food

- Rich in heart healthy compounds - vegetable protein, complex carbohydrates including dietary fiber, folate, antioxidants, phytochemicals
- Low in fat, saturated fat and sodium\*
- Contain no cholesterol or trans fats

### Cardioprotective effects of pulses



FOOTNOTE: \*The sodium content of canned pulses can be reduced by up to 41% if the product is drained and rinsed.<sup>1</sup>

**Research has shown that regular consumption of pulses (dry beans, peas, chickpeas and lentils) may reduce the risk of cardiovascular disease.**

**Pulse Canada** 

## PULSES:



Pulses provide important nutrients like protein, dietary fiber, vitamins and minerals, are low in total and saturated fat and contain no cholesterol. Analysis of dietary intake data from the 1999-2002 National Health and Nutrition Examination Survey (NHANES) study found that adults in the U.S. consuming approximately ½ cup dry beans or peas had higher intakes of fiber, protein, folate, zinc, iron and magnesium and lower intakes of saturated and total fat.<sup>2</sup>

## Recommendations for Pulse Consumption

- ✓ The Heart and Stroke Foundation of Canada states that a heart-healthy diet includes foods that are high in fiber and that soluble fiber may help lower cholesterol and control blood sugar. The best sources of soluble fiber are oatmeal and oat bran, legumes such as dried beans, peas and lentils, and pectin-rich fruits.<sup>3</sup>
- ✓ The American Heart Association recommends eating 4-5 servings a week of legumes (pulses), nuts and seeds per week to follow a heart healthy diet; one serving equals ½ cup cooked dry beans or peas.<sup>4</sup>
- ✓ Canada's Food Guide recommends eating meat alternatives such as beans, lentils and tofu often to minimize the amount of saturated fat in the diet. One serving of pulses is ¾ cup (175 mL) or about the size of a tennis ball.<sup>5</sup>
- ✓ The United States Department of Agriculture's (USDA) MyPyramid food guidance system includes pulses in both the "Meat & Beans" group as well as the "Vegetable" group. Pulses are excellent sources of plant protein and provide other nutrients such as iron and zinc, similar to meats, poultry, and fish. Pulses are also excellent sources of dietary fiber and nutrients such as folate that are found in plant foods like vegetables. A ½ cup of pulses counts as a two ounce equivalent in the Meat & Beans Group or to one serving in the Vegetable group.<sup>6</sup>
- ✓ The 2005 Dietary Guidelines, developed by the USDA, recommend eating 3 cups of legumes per week, including beans, peas, lentils and chickpeas.<sup>7</sup>
- ✓ The US Food and Drug Administration has also approved the following dietary guidance message for use on American products and advertising: A diet including beans may reduce your risk of heart disease and certain cancers.<sup>8</sup>

**Eating pulses regularly may also lower CVD risk via favorable effects on blood pressure, blood glucose and insulin levels and by satisfying hunger and helping manage body weight.**

## Heart-healthy Agents Found in Pulses

**FIBER** - Pulses are rich in total and soluble fiber, which can limit the absorption of fats in the intestines and lower blood cholesterol levels.<sup>9</sup> Epidemiological studies have associated higher intakes dietary total and soluble fiber with lower incidences of coronary heart disease events.<sup>10-12</sup> The dietary fiber content of pulses and other common foods can be found in the table below.

**FOLATE** - Pulses are an excellent source of the B vitamin folate. One serving (¾ cup) of pulses, on average, provides the recommended daily intake (RDI) for folate. Adequate folate intake has been found to reduce elevated blood homocysteine, a independent risk factor for cardiovascular disease (CVD).<sup>13</sup>

**LOW IN FAT** - A healthy diet low in saturated and trans fats may reduce the risk of heart disease.<sup>14</sup> Pulses are low in total and saturated fat and free of trans fats and cholesterol.

**ANTIOXIDANTS** - Considerable evidence suggests that greater antioxidant intake may inhibit the oxidation of LDL cholesterol, improve arterial health and reduce heart disease risk.<sup>15</sup> Pulses have a remarkable antioxidant capacity attributed to tannins, flavonoids and polyphenols present in their seed coat.<sup>16</sup>

**OTHER PHYTOCHEMICALS** – Pulses contain high levels of phytochemicals like polyphenols, phytates and saponins that have been shown to offer cholesterol lowering or antioxidant benefits.<sup>16-18</sup>

## TOTAL DIETARY FIBER\*

	Fiber (grams)	Percent Daily Value**
 Navy Bean	19.1	76%
 Split Pea	16.3	65%
 Lentil	15.6	62%
 Pinto Bean	15.4	62%
 Chickpea	12.5	50%
 Bran Flakes	7.1	28%
 Whole wheat spaghetti	6.3	25%
 Whole wheat bread	3.8	15%

\*Amount in 1 cup cooked, except for Bran Flakes (1 cup dry) and whole wheat bread (2 slices)  
\*\*Recommended daily value = 25 grams fiber/day

## Pulses are low in total and saturated fat and free of trans fats and cholesterol.

Cardiovascular disease (CVD) is the leading cause of death and accounts for nearly 30% of deaths worldwide each year.<sup>19</sup>

Clinical studies have shown that regular consumption of pulses can reduce blood levels of total cholesterol and low-density lipoprotein (LDL also known as the “bad”) cholesterol - two major risk factors for CVD. Pulses have little or no effect on high-density lipoprotein (HDL or “good”) cholesterol or blood lipids (triglycerides). Overall, the evidence for the role of pulses in reducing CVD risk is promising.<sup>20</sup>

A recent meta-analysis evaluating data from 10 randomized clinical trials representing 268 participants found that eating pulses reduced total cholesterol levels by 11.8mg/dL (5.5%) and low-density lipoprotein cholesterol by 8 mg/dL (6.6%) as compared to control diets.<sup>21</sup> Study participants ranged in age from 18 to 78, were predominantly male (70.1% of all participants) and were not taking cholesterol lowering

drugs. Most trials matched macronutrient and energy content between the pulse diet and control diet groups, including amounts of saturated and total fat in the diets. Intervention diets included the addition of mixed pulse dishes, whole chickpeas, field beans ground into flour, whole pinto beans, canned baked beans, whole peas and whole navy beans, among others. Comparison groups consisted of calorie and macronutrient-matched control diets, often with a wheat-based or canned vegetable substitution. Intervention durations ranged from 3 to 8 weeks and most of the studies were conducted in free-living adults. This meta-analysis of randomized controlled trials provides the strongest evidence to date that non-soy legume consumption lowers serum total and LDL cholesterol and therefore may lower the risk of CVD.

**Increased pulse consumption should be part of dietary modification strategies that target the reduction of risk factors for CVD in addition to other strategies of proven benefit.**

Eating pulses regularly may also lower CVD risk via favorable effects on blood pressure, blood glucose and insulin levels and by satisfying hunger and helping manage body weight. Results from the National Health and Nutrition Examination Survey (NHANES) Epidemiologic Follow-up Study indicate that men and women who reported consuming legumes 4 or more times per week had a 22% reduction in coronary heart disease risk, compared with those who consumed legumes less than once a week. Higher legume intakes were associated with lower body mass index (BMI), blood pressure, serum total cholesterol (TC) and a lower incidence of diabetes mellitus, compared with lower legume intakes.<sup>22</sup>

The 2005 Dietary Guidelines, developed by the USDA, recommend consuming 3 cups of pulses per week, however current consumption is less than half that. Increased pulse consumption should be part of dietary modification strategies that target the reduction of risk factors for CVD in addition to other strategies of proven benefit.

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## Canada

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