

## Pulse Supplementation Improves Gut Health and Lowers Total Cholesterol in Postmenopausal Women

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**Objectives:** Menopause is associated with many physiological changes as well as increased risk of obesity, cardiovascular disease, type 2 diabetes, and gut-related diseases (i.e. irritable bowel syndrome, inflammatory bowel disease, colon cancer). Data regarding the use of pulse crops in alleviating health risks associated with menopause are limited. This study investigated the effects of pulse supplementation on markers of gut health and metabolic outcomes in postmenopausal women.

**Methods:** Thirty-five postmenopausal ( $\geq 1$  year without menstruation) women, ages 45–70 years old, who were not on hormone replacement therapy, probiotics, antibiotics, multiple supplements, or medications that affect lipids or glucose, were recruited for this clinical study. Study participants were asked to consume 100 g of pulses (alternate between chickpeas, kidney beans, pinto beans, black-eyed peas, and lentils) daily for 12 wks, and to maintain their normal diet and lifestyle. Anthropometric measures including body composition

by dual-energy X-ray absorptiometry, plasma lipids and glucose, fecal short chain fatty acids (SCFAs), and stool characteristics (Bristol Stool Chart and the Cleveland Clinic Constipation Scoring System) were assessed before and at the end of 12-wk supplementation.  $P < 0.05$  was considered statistically significant.

**Results:** There were no differences in anthropometric measures and plasma glucose at the end of the 12-wk supplementation compared to baseline. However, a reduction in plasma total cholesterol ( $p = 0.039$ ) and LDL-C ( $p = 0.026$ ), but an increase in both VLDL-C ( $p = 0.031$ ) and triglycerides ( $p = 0.033$ ) were observed with pulse supplementation. Constipation score significantly improved ( $p = 0.003$ ) but no change in stool quality were observed with pulse supplementation. Fecal acetic acid ( $p < 0.001$ ), n-butyric ( $p = 0.038$ ), n-caproic ( $p = 0.004$ ) and total SCFAs ( $p = 0.001$ ) were also significantly increased with pulse supplementation.

**Conclusions:** Our findings demonstrate that 12 wks of pulse supplementation improved markers of gut health and lowers total- and LDL-cholesterol in postmenopausal women. This population who are at an increased risk for cardiovascular and gut-related diseases can benefit from regularly consuming pulses.

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