

Both Potatoes and Beans Reduced Insulin Resistance, Weight in Controlled Study

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Low energy–density diets that are based either on potatoes or beans similarly reduced [insulin resistance](#) in adults with poor blood glucose control, according to a controlled feeding study in 36 individuals.

Potatoes have gotten a bad rap for their high glycemic index, but they have little fat and a low energy density, wrote the study investigators. In fact, "cooling of gelatinized potatoes generates appreciable levels of slowly digested starch (resistant starch type 3) and substantially lowers the blood glucose response that potatoes elicit."

"There is a view that potatoes are a less healthy plant food, but there is very little empirical data from randomized trials to support this view," senior investigator John P. Kirwan, PhD, said in an interview.

Dry beans and peas (known as pulses) also contain resistant starch that improves [insulin](#) sensitivity and glucose tolerance, and multiple studies support pulses as part of a low-glycemic diet to improve glucose control in adults, the researchers explained, but because the density of food often guides how much people eat, they hypothesized that potatoes could substitute for beans and provide similar glucose control benefits.

In a study [published](#) in the Journal of Medicinal Food, the researchers randomized 36 adults aged 18-60 years with insulin resistance to 8 weeks of a low energy–density diet (1 kcal/g) high in either potatoes or beans. The baseline body mass index ranged from 25 to 40 kg/m². Insulin resistance was defined using the homeostatic model assessment of insulin resistance (HOMA-IR) with a score greater than 2.

The controlled diet consisted of 50%-55% carbohydrates, 30%-35% fats, and 15%-20% protein. Each meal in the potato group included a side of potatoes, and each meal in the bean group included a side of beans.

The primary outcome was the mean change in blood glucose concentration; the researchers also assessed weight loss.

A total of 14 individuals in the potato group and 17 in the bean group completed the study, but data from the 18 individuals in each group were included in an intent-to-treat analysis.

Among study completers, HOMA-IR in the bean group showed an average decrease of 1.4 from baseline ($P = .02$); a similar decrease of 1.3 occurred in the potato group ($P < .05$) with no significant difference between the two diets.

Overall compliance with both diets was roughly 88%. Body weight reductions were similar in both groups and significantly reduced from baseline over the study period, with average reductions in an intent-to-treat analysis of 5.82 kg in the potato group and 4.0 kg in the bean group. BMI also was significantly reduced from baseline in both potato and bean groups (2.04 kg/m² and 1.35 kg/m², respectively). Although baseline differences were not significant, "BMI at baseline was higher and the reduction in response to the treatment was significantly greater in the potato diet compared with the bean diet," the researchers noted. The effect on blood glucose response was not significantly different between the two groups or from baseline, they said.

The findings were limited by several factors including the small size, relatively short study period, and controlled nature of the study diet, the researchers noted. "The addition of a typical Western diet would have enhanced our understanding of the effect of low energy–dense diets on metabolic outcomes," they noted in their discussion.

- However, both diets led to a reduction in body weight, and the low energy density of both potato and bean diets promoted weight loss without affecting appetite or requiring calorie restriction, the researchers explained. Therefore, "this weight loss if sustained over time could have a substantial impact on body weight," they said.
- "We hypothesized that there would be equivalence between the potato and bean diet and this hypothesis proved to be correct," said Kirwan, of the Pennington Biomedical Research Center, Baton Rouge, La., in an interview.
- The take-home message for clinicians is that, though small, the study was very well-controlled, Kirwan emphasized. "Clinicians ought to consider the health benefits of the potato when it is cooked and served appropriately."
- Looking ahead, larger randomized controlled trials with additional control arms, longer time of at least 12 weeks, and different patient populations are needed, Kirwan added.

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