

SUMMER 2023



NUTRITION BULLETIN

IN THE LATEST EDITION OF THE ALMOND BOARD NUTRITION BULLETIN:

- A suite of exciting new diabetes research studies that show how a small daily addition of almonds can make a huge difference
- Two new resources to support your practice:
 - An Almond Academy research backgrounder on newly-published studies including how to communicate the findings
 - An invitation to a free webinar about almonds and exercise recovery

RESEARCH SPOTLIGHT: BLOOD SUGAR CONTROL



Two new research studies with almonds, **one** conducted over three days and the **other** over three months, demonstrated benefits to blood sugar control for Asian Indians with prediabetes and overweight/obesity – and the three-month almond intervention broke new ground, reversing prediabetes, or glucose intolerance, to normal blood sugar levels in nearly one quarter (23.3%) of the people studied.

In both interventions, 60 people ate 20g of almonds (about a small handful) 30 minutes before breakfast, lunch, and dinner – known as “preloading” - throughout the study durations. Researchers expressed their enthusiasm for these almond studies and the first-of-its-kind statistically significant reduction in measures of prediabetes by calling the reversal of prediabetes through diet “the holy grail of medicine.” Both studies were randomized controlled trials funded by the Almond Board of California.

Gulati, S., Misra, A., Tiwari, R., Sharma, M., Pandey, R. M., Upadhyay, A. D., & Sati, H. C. (2023). Beneficial effects of premeal almond load on glucose profile on oral glucose tolerance and continuous glucose monitoring: randomized crossover trials in Asian Indians with prediabetes. *European Journal of Clinical Nutrition*. <https://doi.org/10.1038/s41430-023-01263-1>

STUDY DESIGN

In the three-month study, participants were randomized into either the almond treatment group or the control group, and both were provided with diet and exercise counselling as well as home-use glucometers to measure their glucose levels, which were recorded in diaries along with dietary intake and exercise.

Study measures comprised a variety of anthropometrics: body weight; circumferences of waist, hips, and arms; skinfolds of customary locations of the body; and body fat estimates. Biochemical measures included insulin, blood sugar, haemoglobin A1c, C-peptide, glucagon, proinsulin, high sensitivity C-reactive protein, tumour necrosis factor alpha, and lipids.

RESULTS

Eating 20g of almonds ahead of breakfast, lunch, and dinner, for three months resulted in first-of-its kind statistically significant reductions for the treatment group in body weight, body mass index, waist circumference, skinfold tests for shoulder and hip areas, as well as improved handgrip strength. Similarly, reductions were seen for fasting glucose, postprandial insulin, haemoglobin A1c, proinsulin, total cholesterol, LDL-cholesterol, and very low-density lipoprotein. Importantly, no changes occurred with beneficial HDL-cholesterol, meaning this cardioprotective lipid was maintained despite other observed biochemical alterations.

These substantial metabolic improvements led to nearly a quarter (23.3%) of the prediabetes study participants returning to normal blood glucose regulation.

LIMITATIONS

Study limitations include the relatively small sample size and limited period of intervention. They also noted that the study included Asian Indians who had well-controlled prediabetes, and the researchers cannot extrapolate the same impact of a premeal load of almonds in participants with type 2 diabetes.

CONCLUSIONS

With both studies, participants who ate 20g of almonds 30 minutes before a meal showed significant improvements in glycaemic control compared to not eating almonds before meals over three months. Almonds can be part of a nutritious dietary solution offering good potential for the reversal of prediabetes to normal glucose regulation in some Asian Indians and therefore potentially prevent or delay the development of diabetes in people with prediabetes.

RESEARCH SPOTLIGHT: ALMONDS AND INSULIN RESISTANCE



Another new study reported that eating almonds daily for 12 weeks reduced insulin resistance, improved pancreatic function, and helped control blood glucose levels. The almond treatment group achieved significant reductions in body weight, body mass index (BMI), and waist circumference over the intervention period and lowered their total cholesterol.

The international team of nutrition experts assessed the effects of 43g of raw almonds eaten daily for 12 weeks on insulin sensitivity, insulin resistance, and serum lipid markers among Asian Indian adults with overweight and obesity living in Chennai City, India.

Gayathri, R., Abirami, K., Kalpana, N., Manasa, V. S., Sudha, V., Shobana, S., Jeevan, R. G., Kavitha, V., Parkavi, K., Anjana, R. M., Unnikrishnan, R., Gokulakrishnan, K., Beatrice, D. A., Krishnaswamy, K., Pradeepa, R., Mattes, R., Salas-Salvado, J., Willett, W., & Mohan, V. (2023). Effect of almond consumption on insulin sensitivity and serum lipids among Asian Indian adults with overweight and obesity—A randomized controlled trial. *Frontiers in Nutrition*. DOI: 10.3389/fnut.2022.1055923

STUDY DESIGN

Employing a randomized controlled design, researchers studied 352 male and female Asian Indian participants (intervention = 174; control = 178). Age range was 25 to 65 years and BMI ranged from 23 kg/m² and up. Researchers used BMI guidelines from the World Health Organization – Western Pacific Region stating that > 23 kg/m² corresponds to overweight and > 25 kg/m² to obese. Participants had central obesity, dyslipidemia (i.e., imbalance of blood lipids, such as cholesterol), family history of diabetes, normal blood pressure as well as hypertension, and routinely consumed mid-morning snacks.

Measures included body weight, blood pressure, glucose, insulin, cholesterol, beta cell function (i.e., the cells in the pancreas that make insulin), and others. A subsample of 126 participants was asked to wear a continuous glucose monitor for 14 consecutive days.

RESULTS

Researchers found that participants in the almond treatment group had improvement in their beta cell function—those cells that make insulin—reduced insulin resistance and lowered total cholesterol. In addition, these participants had significant reductions in body weight, BMI, waist circumference, glucose, and triglycerides over 12 weeks.

In addition to these cardiometabolic benefits, the almond intervention participants consumed 13% fewer carbohydrates, increased calories from fat, and experienced increased intakes of protein, monounsaturated fat, and dietary fibre. For the subsample wearing the continuous glucose monitors, the almond intervention participants had better glycemic responses compared to the control participants.

LIMITATIONS

Findings in this study may only generalize to Asian Indian adults with overweight and obesity.

CONCLUSIONS

A single dietary intervention of the addition of 43g of almonds as a snack has a beneficial effect on both excess body weight and diabetes which are two conditions that often go hand in hand. A 30g serving of almonds provides 4g of fibre, 6g of plant protein, and essential nutrients including magnesium, potassium, and 7.7mg of vitamin E (60% NRV), making them an ideal nutrient-rich snack to help manage diabetes and promote heart health.

HP CORNER



NEW Research Webinar Almonds: Food for Fitness

- We invite you join us for a free webinar “Almonds: Food for Fitness” with Dr. David Nieman. Dr. Nieman is professor and director of the Appalanchian State University Human Performance Laboratory at the North Carolina Research Campus (US). He is a pioneer in exercise and nutrition science and has published more than 390 peer-reviewed publications.
- In this webinar, he will share just-published findings suggesting that almond intake can support muscle function and recovery after physical activity and explore the exciting science of metabolism during exercise.
- The webinar is approved for 1.0 of Continuing Professional Development by the British Dietetic Association.



NEW Almond Academy Guide: “Communicating new almond research to different audiences.”

We developed a resource to help keep you abreast of novel almond nutrition research as well as provide expert tips on how to communicate with consumers using credible and easy-to-understand health messages.

RECIPE INSPIRATION



PAPRIKA ALMONDS

Visit the Recipe Centre to find lots of easy-to-make flavourful recipes using nutritious almonds.

Try out our [zesty Paprika Almonds](#) made from familiar ingredients in your kitchen!