

Acute and second-meal effects of almond form in impaired glucose tolerant adults: a randomized crossover trial.

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Abstract:

Nut consumption may reduce the risk of developing type 2 diabetes. The aim of the current study was to measure the acute and second-meal effects of morning almond consumption and determine the contribution of different nut fractions. Fourteen impaired glucose tolerant (IGT) adults participated in a randomized, 5-arm, crossover design study where whole almonds (WA), almond butter (AB), defatted almond flour (AF), almond oil (AO) or no almonds (vehicle - V) were incorporated into a 75 g available carbohydrate-matched breakfast meal. Postprandial concentrations of blood glucose, insulin, non-esterified free fatty acids (NEFA), glucagon-like peptide-1 (GLP-1) and appetitive sensations were assessed after treatment breakfasts and a standard lunch. WA significantly attenuated second-meal and daylong blood glucose incremental area under the curve (AUCI) and provided the greatest daylong feeling of fullness. AB and AO decreased blood glucose AUCI in the morning period and daylong blood glucose AUCI was attenuated with AO. WA and AO elicited a greater secondmeal insulin response, particularly in the early postprandial phase, and concurrently suppressed the second-meal NEFA response. GLP-1 concentrations did not vary significantly between treatments. Inclusion of almonds in the breakfast meal decreased blood glucose concentrations and increased satiety both acutely and after a second-meal in adults with IGT. The lipid component of almonds is likely responsible for the immediate post-ingestive response, although it cannot explain the differential second-meal response to AB versus WA and AO.