Appetitive, dietary and health effects of almonds consumed with meals or as snacks.

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Abstract:
The contribution of snacking compared with meal eating to energy and nutrient intake is poorly characterised. This study investigated the effects of almonds, a satiating and nutrient-rich, common snack, on postprandial glycemia, appetite, short-term body weight and fasting blood parameters when consumed with meals or alone as a snack. This was a four-week randomized, parallel-arm study that entailed consuming almonds (43g/day) with breakfast (BF) or lunch (LN), alone as a morning (MS) or afternoon (AS) snack, or no almonds (CL). Participants (N=137) with increased risk for type 2 diabetes completed an oral glucose tolerance test (OGTT) and acute feeding session at baseline, followed by almond consumption for four weeks before repeating the OGTT and acute feeding trials. Anthropometric, biochemical, and appetite responses were assessed. Almonds lowered serum glucose responses postprandially. Effects were most prominent in the snack groups. Almonds, consumed as snacks, also reduced hunger and desire to eat during the acute feeding session. After four weeks, anthropometric measurements and fasting blood biochemistries did not differ from the control group or across intervention groups. Without specific guidance, daily energy intake was reduced to compensate for energy from the provided almonds. Dietary monounsaturated fat and α-tocopherol intakes were significantly increased in all almond groups. Almonds provide post-ingestive metabolic and appetitive benefits and did not increase risk for weight gain. This suggests almonds may be a healthful snack option.