Effects of almond consumption on metabolic function and liver fat in overweight and obese adults with elevated fasting blood glucose: A randomised controlled trial.

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Abstract:
Background: Almonds are a rich source of bioactive components. This study examined the effects of daily almond consumption on glycaemic regulation, liver fat concentration and function, adiposity, systemic inflammation and cardiometabolic health. Methods: 76 adults with elevated risk of type 2 diabetes (T2D) or T2D (age: 60.7 ± 7.7 years, body mass index: 33.8 ± 5.6 kg/m2) were randomly assigned to daily consumption of either 2 servings of almonds (AS:56 g/day) or an isocaloric, higher carbohydrate biscuit snack (BS) for 8 weeks. Glycosylated haemoglobin (HbAlc), glycaemic variability (GV), liver fat, serum aminotransferases, body weight and composition, markers of cardio-metabolic risk and systemic inflammation were assessed at baseline and week 8. Results: No group differential effects were observed on HbAlc, GV, body weight and composition, liver fat and aminotransferases, cardio-metabolic health and inflammatory markers (all P > 0.05). For serum TC/HDL-C ratio a significant gender x treatment x time interaction occurred (P < 0.01), such that in women TC/HDL-C ratio was significantly reduced after AS compared to BS (- 0.36 [0.26] mmol/L [n = 14] vs. -0.14 [0.32] mmol/L [n = 17]; P = 0.05), but not in men (P = 0.52). Conclusions: Compared to BS, AS consumed between meals did not substantially alter glycaemic regulation, liver fat or function, adiposity, and metabolic health and inflammatory markers. Serum TC/HDL-C ratio improved in women, but not in men with AS; but as this sub-analysis was not defined a priori the results should be interpreted with caution. Further research should examine the longer-term health effects of regular almond consumption and differential gender responses.