

Gastric digestion of raw and roasted almonds in vivo.

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Abstract:

Almonds are an important dietary source of lipids, protein, and α -tocopherol. It has been demonstrated that the physical form of almond kernels influences their digestion and absorption, but the role of thermal processes on the digestion of almonds has received little attention. The objectives of this study were to examine the gastric emptying and nutrient composition of gastric chyme from pigs (used as a model for the adult human) fed a single meal of either raw or roasted almonds over a 12-h postprandial period (72 pigs total, 6 pigs at each diet–time combination). Concentrations of glucose, triacylglycerols, and α -tocopherol in peripheral plasma during the 12-h postprandial period were determined. For dry matter and lipid, the gastric emptying profile was not different between raw and roasted almonds. Roasting almonds also did not influence gastric pH, or plasma glucose or triacylglycerols levels. In contrast, the gastric emptying of protein was more rapid for raw almonds compared to roasted almonds ($P < 0.01$) and intragastric protein content exhibited segregation ($P < 0.001$) throughout the stomach, with raw almonds having a higher level of segregation compared to roasted almonds. Postprandial plasma α -tocopherol levels were, on average 33% greater ($P < 0.001$) after consumption of raw almonds, most likely as a result of the higher concentration of α -tocopherol in raw almonds compared to roasted almonds. Roasting of almonds did not influence the overall gastric emptying process, but did lead to differences in the distribution of protein in the stomach and to the gastric emptying of protein.