

Release of protein, lipid, and Vitamin E from almond seeds during digestion.

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Journal Of Agricultural And Food Chemistry

56(9):3409-3416.

Abstract:

The evaluation of the bioaccessibility of almond nutrients and phytochemicals is incomplete. However, it may have important implications for the prevention and management of obesity and cardiovascular disease. We have quantified the release of lipid, protein and vitamin E from almond seeds during digestion and determined the role played by cell walls in the bioaccessibility of intracellular nutrients. Four almond meals were digested in vitro under simulated gastric and gastric followed by duodenal conditions. Finely ground almonds were the most digestible with 39, 45 and 44% of lipid, vitamin E and protein released after duodenal digestion, respectively. Consistent with longer residence time in the gut, preliminary in vivo studies showed higher percentages of nutrient release and microscopic examination of digested almond tissue demonstrated cell wall swelling. Bioaccessibility is improved by increased residence time in the gut and is regulated by almond cell walls.