

## Determination of the protein quality of almonds (*Prunus dulcis* L.) as assessed by in vitro and in vivo methodologies

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### Abstract:

Almonds (*Prunus dulcis*), such as all nuts, are positioned within the protein foods grouping within the current U.S. Dietary Guidelines. The ability to make claims related to the protein content of almonds, within the United States, requires substantiation via the use of the Protein Digestibility-Corrected Amino Acid Score (PDCAAS). The present study was designed to provide current estimates of PDCAAS, using both in vivo and in vitro assays, of key almond varieties from the 2017 California harvest. Additionally, historical protein and amino acid composition data on 73 separate analyses, performed from 2000 to 2014, were analyzed. Amino acid analysis confirmed lysine as the first-limiting amino acid, generating amino acid scores of 0.53, 0.52, 0.49, and 0.56 for Butte, Independence, Monterey, and Nonpareil varieties, respectively. True fecal protein digestibility coefficients ranged from 85.7% to 89.9% yielding PDCAAS values of 44.3–47.8, being highest for Nonpareil. Similar, albeit lower, results were obtained from the in vitro assessment protocol. Analysis of the historical data again positioned lysine as the limiting amino acid and yielded information on the natural variability present within the protein and amino acid profiles of almonds. Comparison of the 2017 AA profile, averaged across almond varieties, to the historical data provided strong evidence of persistence of amino acid composition and indices of protein quality over time.

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