

## HUMAN NUTRITION

**Title:** Determination of DIAAS and PDCAAS for pork burger, plant-based burgers, and the combined meal of burger bun and burgers – NPB #19-234

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### Scientific Abstract

The demand for meat in developed and developing countries is increasing, but plant-based meat is also available. The digestible indispensable amino acid score (DIAAS) method has been recommended to evaluate protein quality in human foods, but the protein digestibility-corrected amino acid score (PDCAAS) method is used for regulatory purposes. There are, however, no values for DIAAS or PDCAAS in plant-based burgers and it is not known how the protein quality of plant-based burgers compares with pork burger. Thus, the objective of this study was to test the hypothesis that pork protein has greater quality than plant protein included in plant-based burgers. One pork burger (i.e., 80% lean), two plant-based burgers (i.e., Impossible Burger and Beyond Burger), and a burger bun were used. Seven diets were formulated. Four diets contained each food ingredient as the only source of crude protein (CP) and amino acids (AA). A N-free was also used and two diets were prepared by combining the pork burger or the Impossible Burger and burger bun. Diets were fed for 9 days to cannulated gilts and there were 6 replicates per diet. The initial 5 days were for adaptation, and fecal samples were collected in the mornings of days 6, 7, and 8. Ileal digesta were collected for 9h on days 8 and 9. The DIAAS values were calculated for children from 6 months to 3 years and for individuals older than 3 years, and PDCAAS values were calculated for preschool children from 2 to 5 years old. Results for DIAAS and PDCAAS indicated that for all age groups, the pork burger had greater ( $P < 0.05$ ) scores than the plant-based burgers, and the combination of pork burger and bun also had greater ( $P < 0.05$ ) scores than the combination of Impossible Burger and bun. In conclusion, results indicate that the pork burger and the combination of pork burger and bun have greater protein quality than plant-based burgers.

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