Poster

In vitro digestibility of plant-based protein foods and ingredients using the INFOGEST workflow vs standardised values in growing pigs

Cristina Gómez-Marín,[1] Hans H. Stein,[2] Natalia S. Fanelli,[2] Beatriz Miralles,[1] Isidra Recio [1]

[1] Instituto de Investigación en Ciencias de la Alimentación, CIAL (CSIC-UAM, CEI UAM+CSIC), C. Nicolás Cabrera, 9, 28049 Madrid, Spain
[2] Divison of Nutritional Sciences, University of Illinois, Urbana, IL, USA
* Corresponding author. Email: beatriz.miralles@csic.es

Abstract:
There is increasing interest in the development of *in vitro* methods to evaluate protein nutritional quality, thus avoiding the use of animal models or human trials. These *in vitro* models should allow for prediction of true ileal protein digestibility at the level of individual amino acids and the calculation of *in vitro* digestible indispensable amino acid scores (DIAAS). However, there is a lack of comparative data between *in vitro* and *in vivo* generated DIAAS values. The aim of this work was to determine the *in vitro* digestibility of amino acids in ten plant-based protein ingredients (i.e. protein isolates and concentrates, and whole food products) and compare results with true (standardised) ileal digestibility for the same ingredients determined in ileal cannulated growing pigs. Dry milk and a whey protein isolate were used for comparison as highly digestible animal-derived protein sources. Good agreement (<5% difference) in protein digestibility with *in vivo* data was observed in all cases except for cornflakes, rapeseed isolate, and green beans, where the difference in digestibility was between 10 and 25%. The *in vitro* method allows for identification of the limiting amino acid in food proteins, and the DIAAS values obtained from the *in vitro* digestibility of amino acids were comparable to values calculated from *in vivo* experiments. More comparative studies are needed to verify the potential suitability of this *in vitro* method.