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Urea recycling is an acute nitrogen-sparing mechanism counterbalancing the higher urea production after plant *v*. animal protein ingestion during the postprandial non-steady-state

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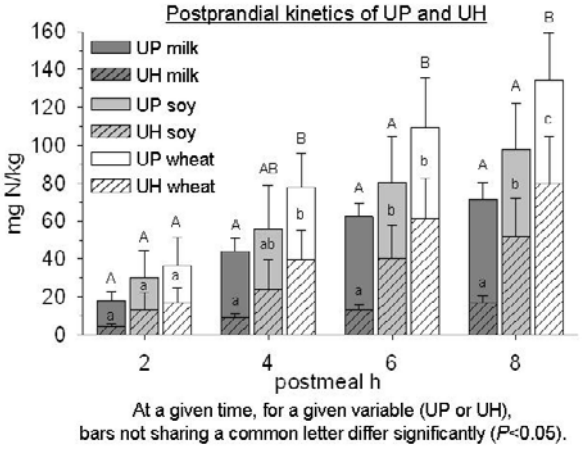
Despite its nutritional significance in relation to protein quality, the influence of the protein source on postprandial urea kinetics is poorly studied. This is a result of the lack of an accurate method to assess acute postprandial changes in urea kinetics. In the present work robust clinical data on N postprandial distribution in some accessible pools have been combined with mathematical modelling to determine postprandial urea kinetics and their modulation by dietary protein quality in human subjects.

In subjects standardized for their usual protein intake dietary and total N kinetics were measured for 8 h in plasma proteins and body and urinary urea after ingestion of a mixed meal containing ^{15}N-labelled milk, soyabean or wheat protein. A four-compartment model was constructed to calculate from these data the postprandial kinetics of total urea-N production (UP), urinary excretion (UE) and intestinal hydrolysis (UH).



Both UP and UH increased after ingesting plant *v*. animal proteins (UP and UH increased from approximately 70 to 130 mg N/kg per 8 h and from approximately 20 to 80 mg N/kg per 8 h respectively), with a concomitant higher hydrolysis of the urea produced (UH : UP increased from 25 % to 50–60 %). In contrast, the resulting UE (i.e. the urea produced but not hydrolysed) did not vary with the dietary protein source (average 55 mg N/kg per 8 h for all meals). In parallel, after plant *v*. animal proteins the same proportion of dietary N was diverted into UP, but more dietary N than endogenous N was salvaged through UH.

UH, which represents a substantial proportion of UP, is an important postprandial adaptive component in the fed state, sensitive to acute qualitative changes in protein intake. Urea recycling could constitute an acute N-sparing mechanism counterbalancing the higher urea production after plant protein ingestion.