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High protein digestibility and utilisation rate of lamb meat hydrolysate in older adults for healthy ageing

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Study Objective

- Sarcopenia is an age-related decline in skeletal muscle accompanying low muscle strength and/or low physical performance in older adults (>60 years) with increasing mortality risk¹
- The study examines a lamb meat hydrolysate as a rich protein source with enhanced postprandial protein utilisation in older adults

Methodology

Study Design:

A randomised, parallel design, postprandial metabolic study (ACTRN12618001065280)

Study intervention meals:

(Iso-caloric and iso-nitrogenous mixed meals)

	Lamb meat protein hydrolysate (83% crude protein, 36% w/w hydrolysis)	Casein
Ingredient		
Lamb meat protein hydrolysate (g)	36	-
Casein (g)	-	33
Canola oil (g)	20	20
Maltodextrin (g)	100	100
Nutritional composition		
Carbohydrate (g)	100	100
Protein (g)	30	30
Fat (g)	20.1	20.4
Energy (kcal)	701.3	703.2

Study Procedure: Stable Isotope Tracer Method

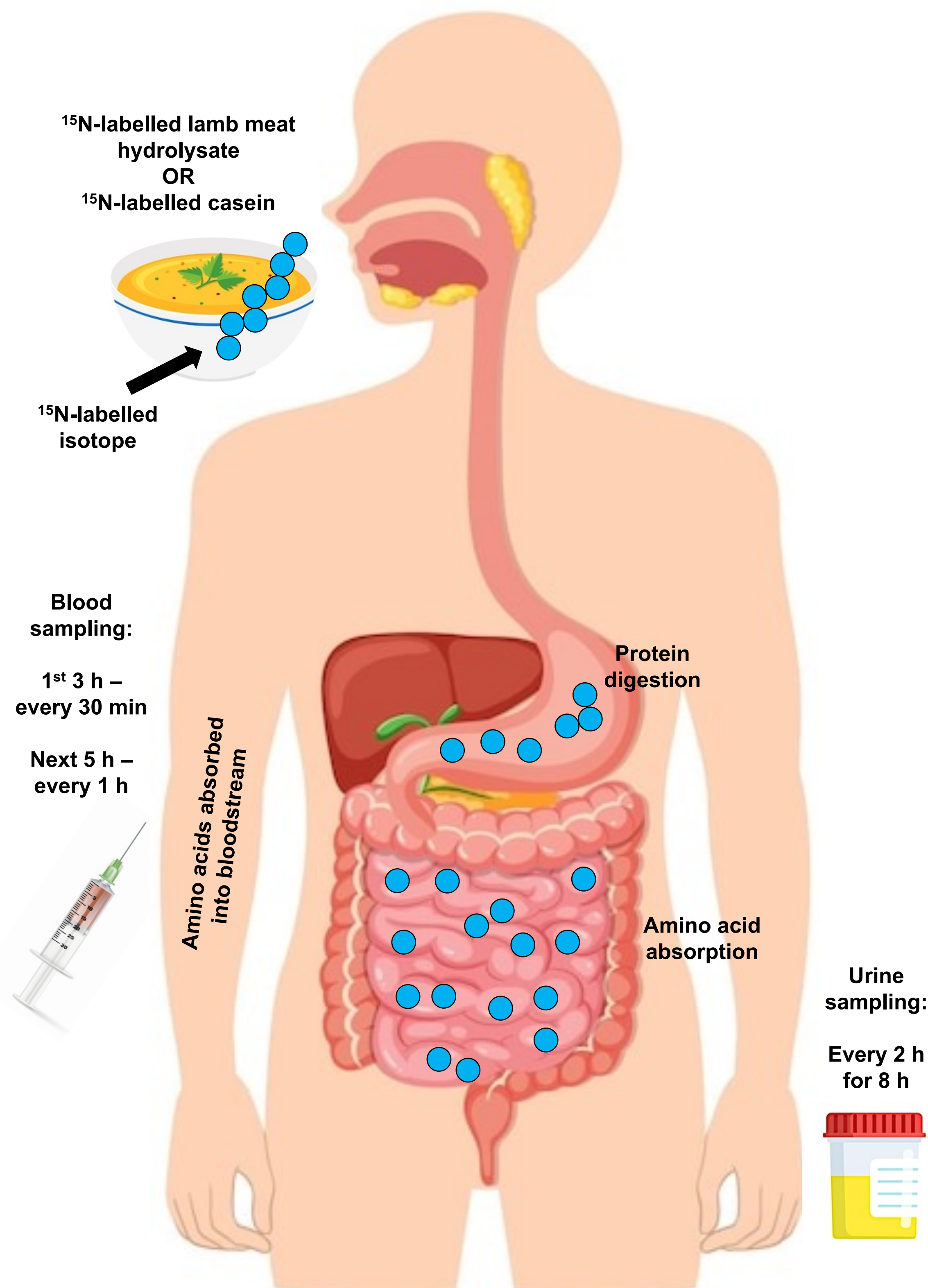


Figure 1: Illustration of study procedure using the stable isotope tracer method²

Results

Participant demographics:

	Lamb meat protein hydrolysate (n=16)	Casein (n=9)	P-value
Gender (M/F)	5/11	5/4	0.270
Age (years)	71.0 ± 0.3	69.1 ± 0.7	0.512
BMI (kg/m ²)	25.7 ± 0.2	24.2 ± 0.4	0.827

Study outcomes after 8 h:

	Lamb meat protein hydrolysate (n=16)	Casein (n=9)	P-value
Total deamination losses (%)	13.5 ± 1.3	13.0 ± 1.3	0.833
NPPU (%) ¹	84.9 ± 1.4	84.6 ± 1.4	0.877
PBV (%) ²	86.3 ± 1.5	86.6 ± 1.4	0.871

¹Net postprandial protein utilisation; ²Postprandial biological value

Discussion and Conclusions

- Lamb meat hydrolysate possesses high protein digestibility, amino acid utilisation rate, and low deamination losses comparable to highly digestible and utilisable casein protein
- Lamb meat hydrolysate may thus be used as a high-quality source of essential amino acids for protein synthesis in older adults

References

- Xu J, Wan CS, Ktoris K, Reijnierse EM, Maier AB. Sarcopenia Is Associated with Mortality in Adults: A Systematic Review and Meta-Analysis. *Gerontology*. 2022;68(4):361-76.
- Bandyopadhyay S, Kashyap S, Calvez J, Devi S, Azzout-Marniche D, Tome D, et al. Evaluation of Protein Quality in Humans and Insights on Stable Isotope Approaches to Measure Digestibility - A Review. *Advances in Nutrition*. 2022;13(4):1131-43.