

ORIGINAL RESEARCH COMMUNICATION

Postprandial whole-body protein metabolism after a meat meal is influenced by chewing efficiency in elderly subjects^{1,2,3}

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Background: The rate of protein digestion affects protein utilization in elderly subjects. Although meat is a widely consumed protein source, little is known of its digestion rate and how it can be affected by the chewing capacity of elderly subjects.

Objectives: We used a [1-¹³C]leucine balance with a single-meal protocol to assess the absorption rate of meat protein and to estimate the utilization of meat protein in elderly subjects with different chewing efficiency.

Design: Twenty elderly volunteers aged 60–75 y were involved in the study. Ten of them had healthy natural dentition, and the other 10 were edentulous and wore complete dentures. Whole-body fluxes of leucine, before and after the meal (120 g beef meat), were measured with the use of a [1-¹³C]leucine intravenous infusion.

Results: A rapid increase in plasma aminoacidemia and plasma leucine entry rate was observed after meat intake in dentate subjects. In complete denture wearers the increase in leucine entry rate was delayed ($P < 0.05$), and the amount of leucine appearing in peripheral blood during the whole postprandial period was lower than in dentate subjects ($P < 0.01$). Postprandial whole-body protein synthesis was lower in denture wearers than in dentate subjects (30% compared with 48% of leucine intake, respectively; $P < 0.05$).

Conclusion: Meat proteins could be classified as fast digested proteins. However, this property depends on the chewing capacity of elderly subjects. This study showed that meat protein utilization for protein synthesis can be impaired by a decrease in the chewing efficiency of elderly subjects.

Key Words: Leucine kinetics • protein metabolism • meat • chewing efficiency • elderly

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