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The gut takes nearly all: threonine kinetics in infants^{1,2,3}

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Background: Threonine is an essential amino acid that is abundantly present in intestinally produced glycoproteins. Animal studies show that intestinal first-pass threonine metabolism is high, particularly during a restricted enteral protein intake.

Objective: The objective of the study was to quantify intestinal first-pass threenine metabolism in preterm infants during full enteral feeding and during restricted enteral intake.

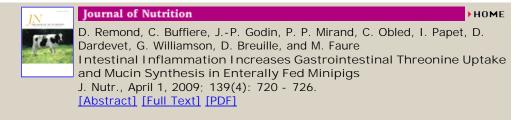
Design: Eight preterm infants ($\bar{x} \pm$ SD birth weight: 1.1 \pm 0.1 kg; gestational age: 29 \pm 2 wk) were studied during 2 periods. During period A, 40% of total intake was administered enterally and 60% was administered parenterally. Total threonine intake was 58 \pm 6 μ mol \cdot kg⁻¹ \cdot h⁻¹. During period B, the infants received full enteral feeding, and the total threenine intake was 63 \pm 6 μ mol \cdot kg⁻¹ \cdot h⁻¹. Dual stableisotope tracer techniques were used to assess splanchnic and whole-body threonine kinetics.

Results: The fractional first-pass threonine uptake by the intestine was remarkably high in both periods: 82 ± 6% during partial enteral feeding and 70 \pm 6% during full enteral feeding. Net threonine retention was not affected by the route of feeding.

Conclusion: In preterm infants, the splanchnic tissues extract a very large amount of the dietary threonine intake, which indicates a high obligatory visceral need for threonine, presumably for the purposes of synthesis.

Key Words: Threonine • preterm infants • intestine • stable isotopes • nutrition • splanchnic metabolism

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