

were fed *ad libitum* to triplicate groups of 20 trout (70 g mean body weight) for a period of 21 d. The intake and growth were recorded; 10 fish in each tank were slaughtered at both the beginning and the end of the period to determine N content of the carcass.

Withdrawal of all dietary SAA resulted in a lower body N loss than that observed with the protein-free diet. On average, a 20% reduction of the SAA supply did not have any significant effect on the N gain (fig 1). But, to high between-tank variation (residual CV: 29% for SAA intake and N gain), the N gain linearly increased with SAA intake ($r = 0.92$; $n = 18$). The sulfur amino acid requirement for maintenance was 97 mg/kg $W^{0.75}/d$ and that for growth was 663 mg/g N gain, respectively 2 and 3 fold higher than those estimated for pigs (Fuller *et al*, 1989). For a trout weighing 100 g, about 14% of the SAA ingested would be utilized for maintenance.

Protein metabolism response to feeding is dependent on age and gender. Y Boirie, P Rousset, B Beaufrère (*Université Clermont-Auvergne, laboratoire de nutrition humaine, CRNH, BP 321, 63009 Clermont-Ferrand, France*)

Body composition is modified during aging but the reason for the decreased lean body mass (LBM) is unknown. To examine the whole-body protein metabolism response to feeding in the elderly, we studied 6 young men (YM), 6 young women (YW), 6 old men (OM) and 6 old women (OW). Their mean age and BMI were 22.6, 21.5, 68.2, 68.3 years and 21.3, 22.0, 26.1, 24.5 kg/m² for YM, YW, OM, OW respectively. Leucine flux (Leu F) and oxidation (Leu Ox) were determined with a [1-¹³C] leucine infusion after an

overnight fast and during the ingestion of a defined test meal (10 kcal/kg) containing 15.6% protein and administered orally every 15 min, for 240 min (dietary leucine intake: 1.40 $\mu\text{mol}/\text{kg}\cdot\text{min}$). The LBM was estimated by bio-electrical impedance analysis using specific geriatric equations.

During fasting, the Leu F was greater in the younger than the older subjects (1.47 ± 0.18 vs 1.23 ± 0.14 $\mu\text{mol}/\text{kg}\cdot\text{min}$, mean \pm SD, $p < 0.001$) without any difference between men and women. Expressed per kg LBM, the Leu F were not different between the groups except for OW, who had a higher Leu F (2.19 ± 0.27 vs 1.82 ± 0.2 , 1.85 ± 0.16 , 1.98 ± 0.23 for OW vs YM, YX, OM, $p < 0.05$). Feeding was associated with an accelerated Leu F in all groups but the Leu F in OW, expressed as $\mu\text{mol}/\text{kg}$ LBM.min, was much greater than in the 3 other groups (3.30 ± 0.38 vs 2.35 ± 0.16 , 2.21 ± 0.25 , 2.50 ± 0.4 for OW vs YM, YW, OM, $p < 0.01$).

The Leu Ox was different between the YM-YW, YM-OM and YW-OW groups during fasting but was totally normalized in all groups when expressed per kg LBM (0.48 ± 0.04 , 0.42 ± 0.06 , 0.46 ± 0.08 , 0.46 ± 0.07 , NS). The Leu Ox increase during feeding was particularly elevated in the OW group, the difference was amplified when expressed per kg LBM (1.89 ± 0.28 vs 1.18 ± 0.13 , 1.12 ± 0.08 , 1.03 ± 0.19 , for OW vs YM, YW, OM, $p < 0.001$).

The main finding of this study was therefore an increased leucine oxidation in elderly women during feeding, which might be a factor in the loss of body proteins. These gender modifications of protein metabolism need to be considered in amino acid kinetic studies and for the protein requirements of elderly people.