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Treatment of Metabolic syndrome by combination of physical activity and diet needs an optimal protein intake: A randomized controlled trial

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Background: The recommended dietary allowance (RDA) for protein intake has been set at 1.0-1.3 g/kg/day for senior. To date, no consensus exists on the lower threshold intake (LTI = RDA/1.3) for the protein intake (PI) needed in senior patients ongoing both combined caloric restriction and physical activity treatment for metabolic syndrome. Considering that age, caloric restriction and exercise are three increasing factors of protein need, this study was dedicated in determining the minimal PI in this situation, through the determination of albuminemia that is the blood marker of protein homeostasis.

Methods: Twenty-eight subjects (19 M, 9 F, 61.8 ± 6.5 years, BMI 33.4 ± 4.1 kg/m²) with metabolic syndrome completed a three-week residential programme (Day 0 to Day 21) controlled for nutrition (energy balance of -500 kcal/day) and physical activity (3.5 hours/day). Patients were randomly assigned in two groups: Normal-PI (NPI: 1.0 g/kg/day) and High-PI (HPI: 1.2 g/kg/day). Then, patients returned home and were followed for six months. Albuminemia was measured at D0, D21, D90 and D180.

Results: At baseline, PI was spontaneously 1.0 g/kg/day for both groups. Albuminemia was 40.6 g/l for NPI and 40.8 g/l for HPI. A marginal protein under-nutrition appeared in NPI with a decreased albuminemia at D90 below 35 g/l (34.3 versus 41.5 g/l for HPI, $p < 0.05$), whereas albuminemia remained stable in HPI.

Conclusion: During the treatment based on restricted diet and exercise in senior people with metabolic syndrome, the lower threshold intake for protein must be set at 1.2 g/kg/day to maintain blood protein homeostasis.

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