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Protein Feeding Pattern, Casein Feeding, or Milk-Soluble Protein Feeding did not Change the Evolution of Body Composition during a Short-Term Weight Loss Program

Authors : Solange Adechian, Michèle Balage, Didier Remond, Carole Migné, Annie Quignard-Boulangé, Agnès Marset-Baglieri, Sylvie Rousset, Yves Boirie, Claire Gaudichon, Dominique Dardevet, Laurent Mosoni

Abstract : Studies have shown that timing of protein intake, leucine content, and speed of digestion significantly affect postprandial protein utilization. Our aim was to determine if one can spare lean body mass during energy restriction by varying the quality and the timing of protein intake. Obese volunteers followed a 6-wk restricted energy diet. Four groups were compared: casein pulse, casein spread, milk-soluble protein (MSP, = whey) pulse, and MSP spread (n = 10-11 per group). In casein groups, caseins were the only protein source; it was MSP in MSP groups. Proteins were distributed in four meals per day in the proportion 8:80:4:8% in the pulse groups; it was 25:25:25:25% in the spread groups. We measured weight, body composition, nitrogen balance, 3-methylhistidine excretion, perception of hunger, plasma parameters, adipose tissue metabolism, and whole body protein metabolism. Volunteers lost 7.5 ± 0.4 kg of weight, 5.1 ± 0.2 kg of fat, and 2.2 ± 0.2 kg of lean mass, with no difference between groups. In adipose tissue, cell size and mRNA expression of various genes were reduced with no difference between groups. Hunger perception was also never different between groups. In the last week, due to a higher inhibition of protein degradation and despite a lower stimulation of protein synthesis, postprandial balance between whole body protein synthesis and degradation was better with caseins than with MSP. It seems likely that the positive effect of caseins on protein balance occurred only at the end of the experiment.

Keywords : lean body mass, fat mass, casein, whey, protein metabolism
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