



The effect of different macronutrients on appetite and satiety in older and younger adults

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Older adults are recommended to increase their protein intake to maintain their muscle mass⁽¹⁾. However, protein is considered the most satiating macronutrient and this recommendation may cause a decrease in total energy intake due to protein's satiating effects⁽²⁾. To date satiety studies comparing macronutrients have been undertaken in young adults and it is unclear if the same response is seen in older adults. The objective of this study was to compare the effect of meals high in protein, fat, and carbohydrate but equal in energy and volume on energy intake and perceived appetite in younger and older adults. Twenty older (70.2 (SD 3.8) years; body mass index (BMI) 25.1 (SD 2.9) kg/m²) and 20 younger (27.7 (SD 3.7) years; BMI 22.42 (SD 2.6) kg/m²) adults completed a single-blinded randomised crossover trial involving three study visits. Three hours after consuming a standard breakfast, participants consumed a preload milkshake high in either carbohydrate, fat, or protein. Three hours after the preload, participants were offered an *ad-libitum* meal. Perceived appetite was assessed before breakfast and every 30 minutes throughout the test days using a 100 mm visual analogue scale. To assess total daily energy intake, participants were asked to record their food intake using a weighed food diary for the rest of the day. There was no difference in height, weight, basal metabolic rate, and hip circumference between the two groups. Age, BMI, and waist circumference of the older group were significantly higher than the younger group ($p < 0.05$). No difference was found between younger and older adults' energy intake either in the *ad-libitum* meal nor on the evening of the test days. There was no difference in energy intake at the *ad-libitum* meal after consuming milkshakes high in either carbohydrate, fat, or protein within younger (1462.52 (SD 647.08); 1469.13 (SD 611.99); 1436.51 (SD 699.58) kcal respectively) and older group (1281.11 (SD 419.27); 1255.49 (SD 497.33); 1241.86 (SD 480.30) kcal respectively). There were no significant differences in postprandial hunger, fullness, wanting and desire to eat food between and within the groups after consuming the different preload meals. In conclusion, the findings showed subsequent energy intake was not affected by consuming different macronutrient preloads in both younger and older adults. Our data do not support the general view that protein is the most satiating macronutrient.

References

1. Deutz NE, Bauer JM, Barazzoni R, *et al.* (2014) *Clin Nutr* 33(6), 929–936.
2. Morell P & Fiszman S (2017) *Food Hydrocolloids* 68, 199–210.