

Layman DK, Shiue H, Sather C, Erickson DJ, Baum J. Increased dietary protein modifies glucose and insulin homeostasis in adult women during weight loss. *J Nutr* 2003;133:405-10.

Amino acids interact with glucose metabolism both as carbon substrates and by recycling glucose carbon via alanine and glutamine; however, the effect of protein intake on glucose homeostasis during weight loss remains unknown. This study tests the hypothesis that a moderate increase in dietary protein with a corresponding reduction of carbohydrates (CHO) stabilizes fasting and postprandial blood glucose and insulin during weight loss. Adult women ($n = 24$; $>15\%$ above ideal body weight) were assigned to either a Protein Group [protein: $1.6 \text{ g}/(\text{kg} \cdot \text{d})$; CHO $<40\%$ of energy] or CHO Group [protein: $0.8 \text{ g}/(\text{kg} \cdot \text{d})$; CHO $>55\%$]. Diets were equal in energy (7100 kJ/d) and fat (50 g/d). After 10 wk, the Protein Group lost $7.53 \pm 1.44 \text{ kg}$ and the CHO Group lost $6.96 \pm 1.36 \text{ kg}$. Plasma amino acids, glucose and insulin were determined after a 12-h fast and 2 h after a 1.67 MJ test meal containing either 39 g CHO, 33 g protein and 13 g fat (Protein Group) or 57 g CHO, 12 g protein and 14 g fat (CHO Group). After 10 wk, subjects in the CHO Group had lower fasting (4.34 ± 0.10 vs $4.89 \pm 0.11 \text{ mmol/L}$) and postprandial blood glucose (3.77 ± 0.14 vs $4.33 \pm 0.15 \text{ mmol/L}$) and an elevated insulin response to meals (207 ± 21 vs $75 \pm 18 \text{ pmol/L}$). This study demonstrates that consumption of a diet with increased protein and a reduced CHO/protein ratio stabilizes blood glucose during nonabsorptive periods and reduces the postprandial insulin response.