

Egg Nutrition Center



Rasmussen BB, Tipton KD, Miller SL, Wolf SE, Wolfe RR. An oral essential amino acid-carbohydrate supplement enhances muscle protein anabolism after resistance exercise. *J Appl Physiol* 2000;88:386-92.

This study was designed to determine the response of muscle protein to the bolus ingestion of a drink containing essential amino acids and carbohydrate after resistance exercise. Six subjects (3 men, 3 women) randomly consumed a treatment drink (6 g essential amino acids, 35 g sucrose) or a flavored placebo drink 1 h or 3 h after a bout of resistance exercise on two separate occasions. We used a three-compartment model for determination of leg muscle protein kinetics. The model involves the infusion of ring-2H5-phenylalanine, femoral arterial and venous blood sampling, and muscle biopsies. Phenylalanine net balance and muscle protein synthesis were significantly increased above the predrink and corresponding placebo value ($P < 0.05$) when the drink was taken 1 or 3 h after exercise but not when the placebo was ingested at 1 or 3 h. The response to the amino acid-carbohydrate drink produced similar anabolic responses at 1 and 3 h. Muscle protein breakdown did not change in response to the drink. We conclude that essential amino acids with carbohydrates stimulate muscle protein anabolism by increasing muscle protein synthesis when ingested 1 or 3 h after resistance exercise.