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weight loss decreased by \( \approx 100 \) kcal/d, the energy intake would have been \( \approx 1700 \) kcal/d, of which 25% of energy (or 101 g) was protein.

Most experimental studies of carbohydrate with protein have a neutral or even positive influence on inflammation and on risk factors for type 2 diabetes, cardiovascular disease, and osteoporosis (2–7). The increased protein content of the diet will normally be based on shellfish, fish, poultry, game, lean pork and beef, low-fat dairy products, lentils, and beans. However, our knowledge about the health effects of lean meat and dairy products is still limited. Whereas low-fat dairy products may be beneficial for preventing obesity, the metabolic syndrome, type 2 diabetes (8), and cardiovascular disease, there is concern that this food group may play a role in certain cancers. Similarly, processed meat may increase the risk of type 2 diabetes (9). Even so, on the basis of the available evidence, I find it difficult to warn individuals who will benefit from weight loss against replacing some of the less-nutritious carbohydrate with protein.

However, there are many aspects of high-protein diets that need to be addressed. We are currently running a large dietary intervention study (DiOGenes: Diet, Obesity and Genes) to identify the diet that is most effective for protecting against weight gain and weight regain in a susceptible population of obese and overweight individuals and their overweight children (10). This 6–12-mo dietary intervention will investigate the effect of different dietary components (high and normal protein contents and high- and low-glycemic-index carbohydrates) on weight-loss maintenance in 350 families in 8 European research centers. In particular, the safety and tolerability of high-protein diets in children will be addressed. Such a study would not have been initiated unless there was a need for more evidence before a high-protein diet can be more widely recommended for weight control.

The author had no conflict of interest related to the topic of this letter.

Arne Astrup

Department of Human Nutrition
Centre for Advanced Food Studies
The Royal Veterinary and Agricultural University
Rolighedsvej 30
DK-1598 Frederiksberg
E-mail: ast@kvl.dk

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Reply to F Contaldo and F Pasanisi

Dear Sir:

Contaldo and Pasanisi offer thoughtful insights into the current global obesity epidemic in regard to food sustainability and the efficacy and health effects of diets high in protein. We acknowledge the complexity of the environmental issues related to the depletion of resources and population growth as well as the social and cultural implications driving food intake and physical activity.

A goal of our study design (1) was to examine the role of protein in body weight regulation. The study diets were created to measure a difference between a moderate-protein diet (15% of energy) and a high-protein diet (30% of energy). The protein foods used in the diets were obtained from both animal and vegetable sources to offer variety and appeal to a diverse population; our experience with study subjects indicates that a diet containing a wide variety of foods is essential for compliance. Our biggest challenge was to keep the fat content of the diet at 20% of energy while we increased the protein content and kept the carbohydrate content constant. To this end we used fat-free and low-fat dairy foods, egg whites, soy protein, and lean meats.

We appreciate the concerns of Contaldo and Pasanisi about the health effects of high-protein diets in regard to calcium and bone metabolism. We concluded in our article that it is essential to study the effects of protein-rich diets on renal function and calcium balance before recommending a high-protein diet for weight loss for the population at large (1). Perhaps the DiOGenes (Diet, Obesity, and Genes) trial described in Astrup’s editorial (2) will begin to provide these answers.

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Holly S Callahan
Colleen C Matthys
Jonathan Q Purnell
David S Weigle

General Clinical Research Center
University of Washington
Seattle, WA 98195
E-mail: hcal@u.washington.edu

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