

# Making It Count

Emerging research suggests spacing protein consumption throughout the day increases its benefits.

BY MATTHEW PIKOSKY, PHD, RD, FACN,  
DAIRY RESEARCH INSTITUTE

**P**rotein is a necessary nutrient that helps build and maintain muscle and bone mass. The Institute of Medicine recommends that adults consume 0.8 g of protein per kg of body weight per day.<sup>1</sup> For instance, a 150-lb person should consume 55 g of protein per day. Whey protein, a high-quality protein naturally found in dairy, has become an increasingly popular protein source. It has a clean, neutral flavor, so it can be added to a wide variety of foods and beverages.

Historically, research has focused on determining protein requirements and defining a minimum amount of protein to consume each day to prevent deficiency. More recently, scientists have transitioned to looking at the total amount of protein one should consume each day and how that relates to a positive health outcome, such as building lean muscle or aiding weight management. This has led some experts to suggest a reevaluation of the recommended daily allowance of protein for certain populations such as children, athletes, and older adults. Researchers are also beginning to examine the impact of how protein intake is spaced throughout the day, trying to find the optimal amount of protein intake at each meal in order to maximize its benefits.

### Falling Short

Many Americans aren't getting the right amount of protein. Between 15 and 38% of adult men and 41% of adult women have dietary protein intakes below the current recommended daily allowance of 0.8 g per kg of body weight per day.<sup>2</sup> Also, related to protein distribution, Americans typically backload their daily protein intake, with a higher intake of protein during late-day meals and less protein in the early and mid-day meals.<sup>3</sup>

Douglas Paddon-Jones, PhD, is an associate professor in the department of physical therapy at the University of Texas Medical Branch at Galveston, with a joint appointment in the department of internal medicine, division of endocrinology. He suggests that adults need to meet the recommended daily allowance for protein and space out their protein intake throughout the day for maximum benefit.



"Approximately 30 g of protein is required at each meal to optimally stimulate and maintain lean muscles," says Paddon-Jones. "Amounts significantly below the recommended level are not enough to effectively turn on the muscle-building process. On the other hand, consuming more than 30 g of protein per meal does not provide additional benefit."

### What's Whey Got to Do With It?

As people age, many will experience an age-related loss of muscle mass, function, and strength—a condition referred to as sarcopenia. Sarcopenia can start at around age 45, when muscle mass begins to decline at a rate of about 1% per year. Sarcopenia affects an estimated 20% of the U.S. population between the ages of 60 and 70 years old and 50% of those ages 75 years and older.<sup>4</sup> But research has shown that diet and lifestyle changes can help slow the progression, reverse, and even prevent this muscle loss to help people maintain an active lifestyle into their golden years.

"Two key tactics to help maintain muscle mass as we age are routine strength-training exercise and adequate amounts of dietary protein," says Matthew Pahnke, PhD, director, nutrition research, Dairy Research Institute. "Whey protein has a high biological value compared with other protein sources, so it is easily absorbed and used by the body. In combination with strength-training exercises, it can help boost the rate at which the body makes lean muscle."

Whey protein is one of the best sources of naturally occurring

branched-chain amino acids, including leucine, which is unique compared with the other amino acids in its ability to initiate muscle protein synthesis.

Researchers at the Exercise Metabolism Research Group at the department of kinesiology at McMaster University (Ontario, Canada) have studied the role of protein

quality on muscle protein synthesis. They found evidence suggesting that the consumption of high-quality milk proteins, such as whey protein, can provide an anabolic advantage over other proteins in promoting muscle protein synthesis. These results are accentuated when combined with resistance exercise.<sup>5</sup>

## Whey to Control Hunger

Whey protein can be helpful as part of a weight-management program. Research shows that consuming a higher-protein diet promotes satiety, or a feeling of fullness. This may assist people in reducing the desire to reach for unnecessary snacks between meals. In addition, calorie for calorie, consuming protein can increase the feeling of fullness more than carbohydrates or fats.<sup>6</sup>

With U.S. obesity rates at an all-time high, an opportunity exists for food and beverage manufacturers to use whey protein in their formulations to target health-conscious adults trying to manage their weight and reduce hunger.

Weight-conscious consumers are likewise seeking products that help them feel full. Satiety is important to consumers when making food and beverage choices, according to a 2008 consumer survey conducted by The NPD Group for Dairy Management Inc.

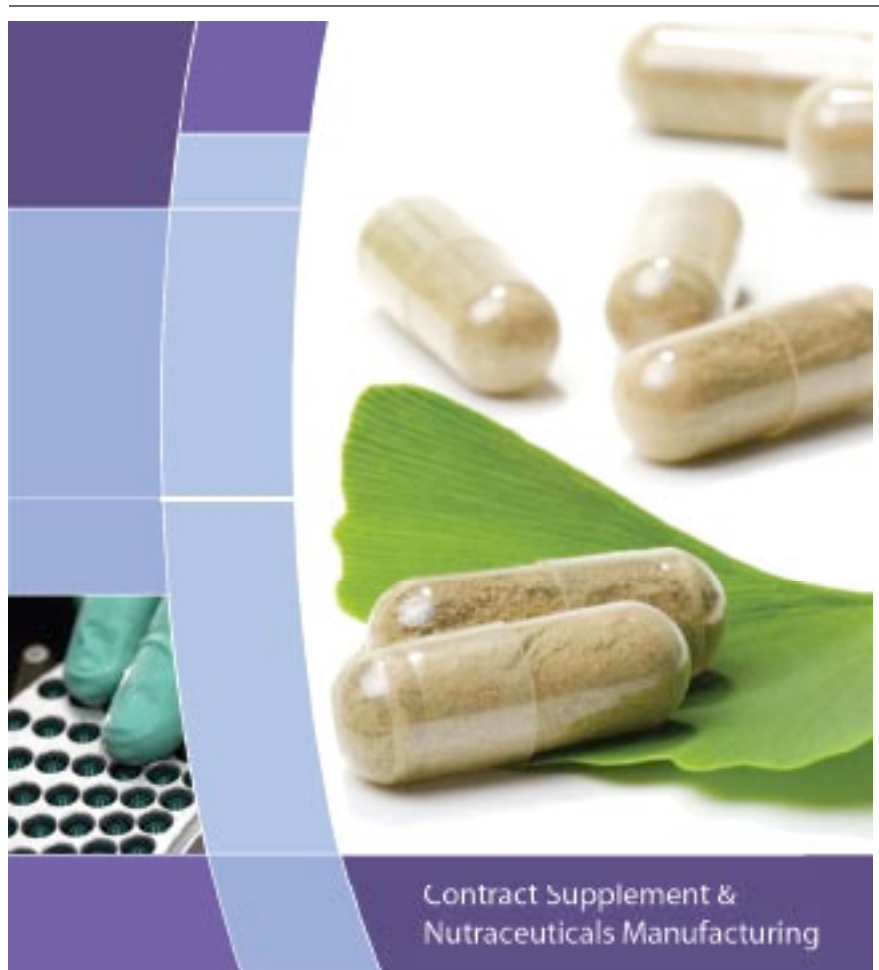
“Sixty-seven percent of these consumers stated that feeling full was important to them when trying to lose weight,” says Vikki Nicholson, vice president, U.S. manufacturing and ingredients marketing, U.S. Dairy Export Council (Arlington, VA).<sup>7</sup>

In seeking new and natural ways to curb hunger, using whey protein as an ingredient in food and beverage products is a way to reach these consumers. In the same NPD Group survey, many consumers said that adding whey protein to a food would have a positive effect on their purchase interest.

## How to Use Whey

Food and beverage manufacturers are already realizing that including whey protein in formulations is an easy and delicious way to boost the protein content of their products. Today, people can find ways to boost their protein intake throughout the day by enjoying whey protein-enhanced products, such as oatmeal, yogurt, smoothies, nutrition bars, flavored beverages, and water. Food formulators have found whey protein to be ideal to incorporate in new innovations because of its many functions.

“Even beyond its nutritional benefits, whey protein is popular in product in-



Contract Supplement & Nutraceuticals Manufacturing

**Medical Horizons is built on the cornerstones of quality and customer service.**

Medical Horizons is a private label manufacturer, specializing in the formulation and development of nutritional and herbal products. Our boutique approach to contract manufacturing allows for unique solutions and low minimums in the delivery of dietary supplements.

[www.medical-horizons.com](http://www.medical-horizons.com)




666 West 900 North • North Salt Lake, UT 84054 • P: 1.800.633.6003 • F: 801.294.3393

novation because of its versatility in foods and beverages,” says K.J. Burrington, dairy ingredient applications coordinator, Wisconsin Center for Dairy Research (Madison, WI). “Whey protein has properties that include emulsification, gelation with heat, good aeration properties, high solubility, and browning. Plus, its neutral taste can be easily incorporated in any flavored product, without the need for masking agents.”

Whey protein provides a tremendous opportunity for the functional food and beverage industry to reach consumers who want protein-packed foods that provide muscle and weight-management benefits. This ingredient’s versatility allows it to be used in a variety of convenient and portable products that today’s consumers demand. Look for whey protein to continue showing up on the ingredient labels of many new on-the-go products such as smoothies, coffee drinks, baked goods, meal replacement beverages, clear beverages, yogurt, and snack bars.

### References

1. Institute of Medicine, National Academies of Sciences, “Dietary reference intakes for energy, carbohydrates, fiber, fat, protein, and amino acids,” National Academies Press, Washington, DC; 2002.
2. Kerstetter J et al., “Low protein intake: the impact on calcium and bone homeostasis in humans,” *Journal of Nutrition*, vol. 133 (March 1, 2003); 855S-861S.
3. National Health and Nutrition Examination Survey, Centers for Disease Control and Prevention (May 2009), [www.ars.usda.gov/Services/docs.htm?docid=18349](http://www.ars.usda.gov/Services/docs.htm?docid=18349).
4. Berger MJ et al., “Sarcopenia: prevalence, mechanisms, and functional consequences,” *Interdiscip Top Gerontol*, vol. 37 (published online August 10, 2010): 94-114.
5. Tang JK et al., “Maximizing muscle protein anabolism: the role of protein quality,” *Current Opinion in Clinical Nutrition and Metabolic Care*, vol. 12, no. 1 (January 2009); 1266-71.
6. Institute of Medicine, “Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids,” National Academies Press, Washington DC; 2005.
7. “Satiety and the Consumer,” Dairy Management Inc., 2008. 

*Matthew Pikosky is vice president, scientific affairs, for the Dairy Research Institute. Pikosky manages the organization's long-term strategic partnerships to leverage dairy farmer dollars. Pikosky's previous role with the organization was to maintain and build awareness and credibility of dairy health benefits to nutrition science/research, health professionals, and food-industry thought leaders through communication of new and existing nutrition science information. Pikosky also previously directed the Dairy Protein Research Program to develop a sound base of science to promote the health benefits of dairy protein. For more information, contact [techsupport@innovatewithdairy.com](mailto:techsupport@innovatewithdairy.com).*



**This is Not a Myth**

**FuCO  
PURE**  
10% Fucoxanthin  
Patent Pending

**Nutraceuticals  
International LLC**

201-796-4041  
Sales@nutraintl.com

[www.nutraintl.com](http://www.nutraintl.com)  
[www.fucopure.com](http://www.fucopure.com)