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Protein Quality Matters

Continuing scientific evidence for
the value of dairy grows

Spurred by a growing body of science, dietitian/trainer advice and a more educated consumer, interest in protein continues to increase. Dairy proteins have advantages in functionality, flavor and nutrition for food and beverage formulators to incorporate into novel products. Higher-protein diets have value because they have been shown to provide a variety of benefits:*

- Maintain a healthy weight
- Curb hunger
- Build lean muscle (with regular resistance exercise)
- Enhance muscle recovery
- Maintain muscle mass during aging

But not all proteins are created equal. Complete proteins (those that contain all essential amino acids necessary to build and maintain muscle) are found mainly in animal sources of protein, including meat and dairy.¹ Achieving higher-protein diets refers to having a protein intake on the higher end of the recommended Acceptable Macronutrient Distribution Range (AMDR). The AMDR for protein is 10 percent to 35 percent of daily energy.² The message “good source of protein” is being viewed by many as very important on food and beverage product labels.³ Now more than ever there are opportunities to formulate using functional dairy proteins. Visit InnovateWithDairy.com for more details.

Why protein research continues to show advantages over soy

Recently released research led by Volek et al from the University of Connecticut, in collaboration with Boston Children’s Hospital, suggests that in young individuals, whey protein is more effective than soy protein in achieving increases in lean body mass as part of a resistance training program.⁴

Because the research was conducted in healthy young adults as opposed to professional athletes, the results have implications for a much larger demographic. In addition, the dosages used can be incorporated readily into food and beverage products that consumers actually could enjoy. Notably, this study confirms previous mechanistic and shorter-term results and is part of a sound scientific research portfolio funded by the dairy checkoff program through the Dairy Research Institute®. Furthermore, it was the first to measure participants’ blood leucine levels. The results lend credibility to the theory that the superior benefits of whey protein in building lean body mass may be related to the branched-chain amino acid content — specifically leucine.

- **Publication:** The online *Journal of the American College of Nutrition* on June 20, 2013
- **Design:** Followed 63 young men and women (18 to 35 years old, ~73 kg) for nine months as they completed a thrice-weekly resistance training program. Participants were given either 22 g of whey protein concentrate, soy isolate or carbohydrate daily at breakfast on nontraining days or immediately following resistance exercise.
- **Topline results:** After completing nine months of resistance training, all participants experienced increases in lean muscle mass. The gains for participants consuming whey protein (3.3 kg) were significantly greater than for participants consuming soy protein (1.8 kg), and the whey group had more leucine in their blood compared with the soy group.

This complements results obtained by Baer et al in 2011 examining body and fat mass loss in 73 overweight and obese adults supplemented with whey protein, soy protein or carbohydrate in conjunction with no additional dietary intervention or counseling. Individuals supplemented with whey protein had a significant reduction (~1 inch) in waist circumference compared with soy and carbohydrate groups. In addition, those in the whey group had a significant reduction in body fat mass compared with the carbohydrate group.

More to come for differentiating dairy proteins

Research continues to examine health outcomes attributed to the differences in protein quality and protein source. For nearly 20 years, the world has accepted the Protein Digestibility Corrected Amino Acid Score (PDCAAS) as the gold standard for measuring protein quality. A recent groundbreaking report by an Expert Consultation of the Food and Agriculture Organization of United Nations (FAO) has recommended a new, advanced method be adopted for assessing the quality of dietary proteins to differentiate protein sources by their ability to supply amino acids for use by the body. The new recommended protein scoring method, the Digestible Indispensable Amino Acid Score (DIAAS),⁵ more accurately calculates protein quality scores, thereby demonstrating the higher bioavailability of dairy proteins when compared with plant-based protein sources.

Based on the FAO committee report, it is estimated that with DIAAS, high-quality proteins from milk, whey and other dairy products may score 30 percent higher compared with scores calculated using the older method (PDCAAS) for assessing protein quality. Consistent with this, the FAO committee report recommends a series of DIAAS values be established for industry that more accurately reflect the protein quality of food.

*Study references cited in the following publication: <http://wheyprotein.nationaldairycouncil.org/wp-content/uploads/2012/02/WheyStateoftheScience.pdf>

¹Protein — Which is Best? *J Sport Sci Med*. 2004;3:118-130.

²Institute of Medicine. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*. Washington, D.C.: National Academy Press; 2005. Food and Nutrition Board.

³The Future of Cheese, A Health and Wellness Perspective. Innovation Center for U.S. Dairy. April 2012. Slide 5.

⁴Volek JS, Volk BM, Gómez AL, et al. Whey Protein Supplementation During Resistance Training Augments Lean Body Mass. *J Am Coll Nutr*. 2013;32(2):122-135.

⁵Food and Agriculture Organization of the United Nations. Dietary protein quality evaluation in human nutrition. 2013. Available at: <http://www.fao.org/ag/humannutrition/35978-02317b979a686a57aa4593304ffc17f06.pdf>. Accessed July 9, 2013.