



Sharon Gerdes

Why Whey for Clear Beverages?

Whey proteins offer functionality and nutrition, making an ideal starting point for a range of healthy clear beverages for every kind of athlete. For the soccer and T-ball generation, whey adds protein punch to fruit-based beverages. For teen athletes, a carbonated whey beverage provides cool muscle fuel. For weekend warriors, an isotonic with whey protein, electrolytes and high glycemic index carbohydrates promotes muscle recovery.

Green tea is also less astringent than black tea, making it a good partner for the WPI. “Teas are naturally astringent, and consumers have come to expect some level of astringency in coffee, tea and wine,” said MaryAnne Drake, Ph.D., associate professor, sensory analysis and flavor chemistry, North Carolina State University (NCSU) and director, NCSU’s Sensory Service Center. “Clean flavor has always been a driving factor for selecting whey proteins,” said Drake. “Our work with trained and consumer panels is help-

proteins in saliva, forming aggregates that give you that drying sensation. This knowledge may help us understand how to modify proteins to make them less astringent at low pH,” said Foegeding. “For example, sugars can be bound to the positively charged groups (amines), removing the charge and making the protein less attractive to the saliva proteins—therefore less astringent.”

At the same symposium, Mark Etzel, Ph.D., professor, food science, University of Wisconsin-Madison, explained that the choice of sweeteners and salts can significantly affect whey beverage clarity. For example, sodium, potassium and calcium salts can decrease clarity, he said. Sugar alcohols can help deliver clear solutions in the pH range of 3.8-4.0.

Supporting whey protein’s role in clear beverages for sports nutrition, recent studies show that whey protein delivers key nutritional benefits such as independently stimulating muscle protein synthesis and supporting new muscle protein synthesis after resistance exercise. According to Matt Pikosky, Ph.D., R.D., director, research transfer, DMI, “Ingesting protein or amino acids as close as possible to the time of exercise appears to be the key,” whether the whey protein is ingested before or after a workout. “Doing so in combination with resistance training exercise appears to cause an increase in muscle protein synthesis, which may, over time, lead ultimately to an increase in muscle mass,” he said.

Research from the University of Toronto also points to a role for whey protein in suppressing food intake and stimulating satiety. Professor G. Harvey Anderson found that young men consuming about 45g of sweet whey protein in a 200-calorie beverage an hour before a pizza meal ate less than if they consumed an equal amount of carbohydrates or egg protein. ■

Clear whey protein beverages are just another application in which whey proteins deliver flavor, functionality and nutrition. To learn more about whey protein, find a supplier or download sample formulations, visit www.innovatewithdairy.com.



At the recent 2007 IFT Annual Meeting, Dairy Management Inc. (DMI), Rosemont, Ill., showcased an innovative clear beverage prototype in the form of a ready-to-drink iced green tea containing whey protein isolate (WPI). This value-added beverage combines the antioxidant properties of green tea with whey protein’s benefits for muscle synthesis, said K.J. Burrington, dairy ingredients applications coordinator, Wisconsin Center for Dairy Research, Madison, Wis. Yet “combining these two popular ingredients can present a technical challenge,” she said, “since tea tannins typically cause precipitation of protein.” Burrington formulated the beverage in the 3.0-3.4 pH range for the best clarity and heat stability of the WPI.

ing industry optimize whey flavor across a variety of applications.”

Burrington added, “In green tea, adding a flavor like mango, peach, or ginseng and honey enhances overall appeal.”

Research supported by the DMI National Dairy Foods Research Center Program aims to expand whey protein’s versatile functionality in beverages. Allen Foegeding, Ph.D., William Neal Reynolds Distinguished Professor, Department of Food Science, NCSU, spoke at an IFT symposium about reducing astringency in beverages. “We’ve determined that whey protein astringency at low pH levels is due to the positively charged whey proteins binding with negatively charged