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# Rethinking Dairy Ingredients

Commercial milk powder production has been with us since the late 1800's. Because many dairy ingredients have been used for a long time, are relatively easy to transport, and are widely available, they are often times taken for granted. Yet, advances in science and technology have opened up new innovative ways to think about and to realize the benefits and versatility of milk and milk components. Hence, taking a fresh, new look at how we can add value to food via dairy ingredient innovations is warranted.

Customization to those who view dairy ingredients as commodities offers obstacles to marketing. On the other hand, innovative dairy ingredient companies see this development as a means to re-energize their mature product lines and/or gain market advantages with new ingredient introductions.

Recent developments in our knowledge of milk proteins and their interactions with other food components allow us to dial in specific functional properties of dairy ingredients by adjusting the balance of minerals, carbohydrate and individual milk proteins. Additionally we have now learned that by carefully adjusting processing and handling conditions (thermal processing, concentration and separation technology, and pre- and post-drying conditions) we can influence the physical state of these components and modify their performance in food products.

For cheese and cultured products markets, dairy ingredient innovations can offer solutions to product developers who must keep churning out new and improved products while keeping costs competitive. For example, careful selection of dairy ingredients can help minimize syneresis (whey off) in cup set

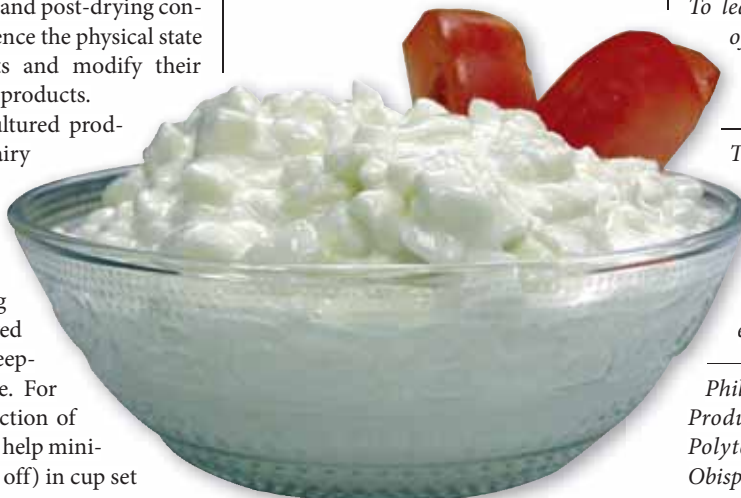
yogurt, and can build viscosity in drinking yogurts to eliminate the need for additional stabilizers. For natural cheese manufacturers, understanding how to maximize cheese yields through careful selection and addition of dairy protein based ingredients to cheesemilk improves plant efficiency.

Dairy ingredients can help to improve health and wellness product offerings. Probiotics are now all the rage and we are now learning that milk and dairy ingredients may contain key prebiotics and ultimately help drive dairy foods as the primary food system for delivery of efficacious probiotic health benefits. Increasingly other health benefits are being associated with milk components such as the whey proteins found in many dairy ingredients. Minerals such as calcium and phosphorus for bone health and other health benefits can be maximized by incorporation of the right dairy ingredients.

Advances in separation science are fueling new opportunities for value added dairy ingredients. Fractions of milk can now be effectively isolated in their more native state which have superior sensory qualities and functional properties that may be conducive to a new family of foods and beverages. Further milk and milk based ingredients can essentially be made

lactose- or fat-free or to whatever ratio of fat, protein, carbohydrate or mineral content is desired. Additionally through innovations in separation technology we may be able to produce essentially bacteria free dairy ingredients streams without thermal processing. How such streams will be translated into a market opportunity will be for those dairy ingredient manufacturers and food product developers to realize.

The scientific underpinnings of these innovative technological solutions stem from commitments to gain a better understanding of the chemistry, and physical properties of milk and milk components. Milk is an extremely complex food material and as new scientific tools emerge to study and better understand the complexity of milk, scientists will continue to uncover new information that can be harnessed to allow new dairy ingredient innovation. Hence, rethinking dairy ingredients can be helpful to re-energize existing markets and help separate you from the competition—whether you are the dairy ingredient supplier or the dairy ingredient user. New advances will have everyone rethinking how they might seek dairy ingredient supplier expertise to provide innovative solutions for tomorrow's consumers. ■



To learn more about the health benefits of milk and milk components see: [www.nationaldairycouncil.org](http://www.nationaldairycouncil.org); [www.innovatewithdairy.com](http://www.innovatewithdairy.com)

To get a jump start on the latest innovations in dairy ingredients technology plan to attend the 11th Annual Dairy Ingredients Symposium (March 9-10, 2009, San Francisco, CA; [www.dptc.calpoly.edu/~symp09](http://www.dptc.calpoly.edu/~symp09))

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