

## New Beverage Products are Dashing to Dairy

*Beverages of all types are working in dairy products and less obvious dairy ingredients for health, satiety and just plain enjoyment.*

By Mark Anthony, Ph.D., Technical Editor | 02/26/2010

Beverages are taking on a milky white hue as dairy dresses up with omega oils, juices take on dairy proteins and non-milk "dairy" choices broaden their botanical horizons. But this isn't merely variety for its own sake; there's method behind the dash to dairy-based new products.

For the beverage industry, this means coming up with drinks that can multitask as creatively as the consumers they're designed to satisfy. For proof of this, we need look no further than arguably the most fundamental beverage, next to water: milk.

"An ongoing challenge for the dairy industry at large is to help Americans nine years of age and older consume three servings of nutrient-rich, low-fat and fat-free milk and milk products every day, as is recommended by the Dietary Guidelines and many other health authorities," says Gregory Miller, executive vice president of research, regulatory and scientific affairs for **Dairy Management Inc.** and the **National Dairy Council** ([www.nationaldairyCouncil.org](http://www.nationaldairyCouncil.org)), both in Rosemont, Ill.

"According to USDA, Americans are only consuming about half — 1.7 servings — of the [three] dairy servings they should every day."

Dairy's earlier responses focused on milk: new flavors, reclosable single-serve plastic bottles and most recently shelf-stable products, which can move through the supply chain (and in your pantry) unrefrigerated and last for months. More than 90 dairies across the U.S. have reformulated flavored milk to be lower in both sugar and calories.

According to Miller, several recent innovations are helping close this dairy gap in new ways. Specialty coffees with up to 80 percent milk are selling at fast-food restaurants such as McDonald's. The QSR giant also just announced (at the Vancouver Olympics) it will be getting into the smoothie business, including dairy-based versions. And dairy-based smoothies, such as the Vivanno line, are taking off at Starbucks.



### Bubbly Omega-3s

Getting fat-soluble nutrients — such as healthy oils, CoQ10, as well as vitamins A, D, E and K — into solution for beverage applications is highly desirable but difficult. "In traditional nutraceutical delivery systems like soft gels, the omega-3s need to be gradually broken down by stomach acid and enzymes in order to be absorbed in the small intestine," says Bradley West, research advisor for **Nordic Naturals Inc.**

The Watsonville, Calif., company

([www.nordicnaturals.com](http://www.nordicnaturals.com))

developed an effervescent formulation for omega oil delivery that allows the compound to be absorbed and enter the blood stream faster — "in as little as 15 minutes," says West

In addition to quicker absorption, the effervescent omega is also easier on the stomach than many traditional omega ingredients and tastes great. "The organic food acid component combines with the carbonate, which buffers the effervescent solution to a normal pH," explains West. "Omega-3 Effervescent is the ultimate solution for individuals with digestive challenges, or those who find it hard to swallow supplements such as soft gels. This revolutionary delivery system is clean on the palate and offers all the amazing health benefits of omega-3s and vitamin D3, such as heart, brain, immune, joint and bone support."

## Yes, whey

There's a lot to raw milk besides milk. The white stuff is 87 percent water, but that other 13 percent contains fats, proteins, lactose and some minerals. The proteins – casein and whey – provide some powerful building blocks for all kinds of product developers.

With 5.8 million dairy cows and only 4.3 million citizens, New Zealand has been aggressively seeking ways to export milk, and dairy ingredients was one of the most effective. As a result, "We export 95 percent of the milk created in New Zealand," says Martin Bates, president & COO of **Fonterra U.S.** ([www.fonterra.com](http://www.fonterra.com)), which is the ingredient marketing arm of the New Zealand milk marketing organization. Its U.S. office is in Rosemont, Ill.

"We fractionate milk," he says, and the result is hundreds of ingredients, from caseinates to whey protein isolates to ingredients for cheese production. The ingredients add huge doses of cost-effective protein to everything from cheeses to bars to beverages.

Beverages are a natural, especially thick, milky ones such as smoothies, pediatric products and meal replacement drinks. Clear beverages, however, presented a challenge for these usually white powdered ingredients. But Fonterra's ClearProtein whey protein isolates provide the nutritional value in clear beverages with slight acidity. (Whey proteins remain clear and soluble at pH less than 3.7. Beverages with higher pH tend to develop cloudiness during storage.)

Research shows whey protein isolates can provide a sense of satiety, and Fonterra is aggressively marketing them in this new application. Kellogg in 2006 stretched its Special K franchise with Special K2O Protein Waters, which delivered 5g of protein per 16-oz. bottle with 50 calories. The company followed with Special K20 protein water mixes (in stick packets), but both products apparently were dropped last year. (Fonterra says it did not provide the protein for Special K2O Protein Waters.)

Also using whey protein is General Mills' Yoplait "Smoothie in a Bag" – which also requires consumers to add a generous amount of milk to make these smoothies at home.

## Got flavor?

A hot trend in all beverage formulations, and dairy is no exception, is lowering calories, often by replacing sugar or high-fructose corn syrup with low- to no-calorie sweeteners. But many high-intensity sweeteners can be tricky to employ without having bitter or off-flavor notes and an aftertaste. To serve the growing demand for making these sweeteners viable in delicate beverage formulas, careful balance is required.

To that end, companies such as **Gold Coast Ingredients Inc.** ([www.goldcoastinc.com](http://www.goldcoastinc.com)) Commerce, Calif., have developed a new generation of masking agents compounded to help mask the "sharpness" of these sweeteners. Michele Trent, corporate sales manager for Gold Coast, stresses that the appropriate masking agent must also be successfully usable in soy,

### Obesity management still carries weight

While the most important news in beverages recently has been zero- and low-calorie sweeteners, other ingredient choices have become available for beverage developers seeking the still-popular weight-control application.

Frutarom USA created Finomate, a green maté extract. Derived from the South American yerba maté plant, known for high concentration of the stimulating xanthines caffeine, theobromine and theophylline, maté has been used for centuries for appetite suppression. Finomate increases fat burning and reduces fat absorption while preserving the appetite control effects. The company also provides other botanical weight-management extracts such as from green coffee bean and apple, which are suitable for specific beverage applications.

wey and energy beverages. The company provides an extensive line of masking agents as well as natural, organic and kosher flavors.

New dairy formulations also are dressing up traditionally dairy-free nutritious drinks to make them either more flavorful or more nutritious. "Milk flavors and masking flavors are commonly used in soy-based beverages to improve consumer acceptance by masking 'beany' notes and adding dairy attributes, such as are in cream or fresh milk," says Anne Druschitz, certified research chef for **Edlong Dairy Flavors Inc.** ([www.edlong.com](http://www.edlong.com)), Elk Grove Village, Ill.

"Dairy flavors can impart creaminess, richness and indulgent profiles in water-soluble or reduced-fat beverages, or mask bitterness or undesirable flavor attributes in beverages fortified with vitamins, minerals or other nutraceutical ingredients," she adds.

Citing specific applications of dairy flavors for beverage enhancement, Druschitz continues, "Flavors can make beverage seem more indulgent while minimally impacting fat and sugar. For example, vanilla-flavored milk can be transformed into vanilla-caramel, and chocolate-flavored milk is [transformed into] dark chocolate truffle. Cream flavors can be added to milk-based drinks and flavored coffees to add richness. And yogurt flavor can be added to frozen fruit beverages and smoothies to add a depth that is appealing to adults; while vanilla and sweet cream flavors in the same products will make them irresistible to kids."

With all the growth in sweeteners and nutraceuticals for beverage development, the classic flavors and colors are rising in popularity. Surveys of manufacturers are showing a growth spurt for chocolate, vanilla, mocha and fruit flavors.

**D.D. Williamson** ([www.ddwilliamson.com](http://www.ddwilliamson.com)), Louisville, Ky., combined its expertise in caramel colors with the increasing demand for clean labels and organic/natural ingredient forms to create a caramelized sugar flavor. The non-GMO flavor is unique in that it's acid-stable (phosphoric and citric) and also adds desired incidental coloring properties.

Hitting just about all of the current trends, California Natural Products, Lathrop, Calif., enters the multi-functional, non-dairy beverage market this month with its own branded **CalNaturale Svelte** ([www.sveltebrand.com](http://www.sveltebrand.com)), "a natural alternative to energy, protein and meal replacement beverages." In addition to the health target, it comes in the top three flavors cited above, chocolate, French vanilla and cappuccino, as well as spiced chai. It's gluten-free and contains 16g of protein from organic soymilk, and is sweetened with a low-sugar blend of stevia, organic complex carbohydrates, including rice syrup solids and inulin. It's also a high-

#### Look to the Future

Shots are still hot. One of the biggest little trends in liquid refreshment has managed to push function way past thirst quenching.

Small drinks, ranging in volume from a few ounces to around 6 oz. and referred to as "shots," gave a shot in the arm to manufacturers small and giant alike in the past year or so. Designed for an energy boost, through either natural stimulants or vitamin inclusion, they typically include an astringent flavor note specifically to present them more as a medicine than a beverage. But that might change, through both necessity and diversification.

"The keys to formulating such healthy beverages is to know how your ingredients interact with what beverage formulators are looking for, such as color, clarity, taste, solubility and active dose," says Matt Phillips, president and COO of **Cyvex Nutrition Inc.** ([www.cyvex.com](http://www.cyvex.com)), Irvine, Calif. He sees the future mainstreaming of this trend to involve being able to deliver the active dosage so that it tastes good.

"We've had several successes recently with agglomerating our AlfaPro beverage which allows the ingredient to be suspended in solution," Phillips continues. "It doesn't drop out of solution, therefore some beverage formulators are looking at adding it to beverages for its protein benefits. For example, we developed a one-shot black currant beverage for a customer. Black currants contain anthocyanins and polyphenols, which are bitter. In order to reduce the bitterness, we had to reduce the anthocyanin content and polyphenol content, add a sweetener and use a black currant flavor to minimize the bitterness."

So, which will be the preferred flavor profile for future functional shots, "mediciny" or refreshing? "Depends on the customer," he says. "To make the health claim, the challenge is in whether the consumer will buy into the bitter, off note tastes of the superfruit ingredient you are using," he concludes.

fiber product, providing a third of the recommended daily value of fiber per serving and is available.