

vending machines, and in these cases we see dairy drinks replacing them: milk, flavoured milks, yoghurt drinks, and – my favourite – the part-juice/part-milk drink”, says Michael P. Natale, director of marketing, Bell Flavors & Fragrances, Northbrook, IL.

“Drinkable yoghurts and dairy drinks in school vending machines stem directly from what we see today’s consumer demanding in their foods and beverages – that is, providing them with healthier options”, Natale says.

And formulated with an eye toward nutrition, such beverages can indeed put soft drinks to shame, as mounting evidence suggests a promising role for dairy in obesity control. Michael Zemel, Ph.D., a professor of nutrition and medicine at the University of Tennessee, led numerous in-

vestigations into dairy’s role in weight management, and he’s drawn the conclusion that dairy can help reduce body fat. A 2005 study he conducted with researchers at the Mayo Clinic, published in *Obesity Research*, showed that adults who consumed relatively high quantities of dairy foods (four servings per day) still lost a significant amount of weight over the 48 weeks under study, provided they also participated in regular exercise and general caloric reduction.

#### Fat Burner

The same year, researchers at Purdue University compared the effects of a diet containing up to two servings of dairy per day with those of a three- or four-serving-per-day diet, finding that among 19 normal-weight women between the ages of 18 and 30, the

higher-dairy cohort burned more fat and calories over the study’s year-long duration than its lower-dairy counterpart – an effect the investigators attributed to dairy calcium, which apparently revs the body’s fat-burning engines by lowering levels of parathyroid hormone.

But not all explorations of the dairy-weight link turn out so rosy. For example, a separate Purdue study found no link between increased dairy calcium and weight loss or gain, in its 155 18- to 30-year-old female subjects.

And after following more than 12,000 children aged nine to 14, researchers at Brigham & Women’s Hospital and Harvard Medical School found that dietary calcium and skimmed milk actually correlated with weight gain, while dairy fat did not.

#### Beyond Soda

So the moral of the story so far is...well, that the story’s not over. But the fact remains that the demand for healthful foods and beverages stretches beyond the newly soda-scrubbed schoolyards. All consumers have taken to reevaluating their dietary choices, and if that means forsaking sugary soft drinks for dairy, they might do just that. The catch is that if dairy drinks are to assume soda’s mantle, they’ll have to answer to many masters, each of whom may be in the market for anything from peak performance to plain-old fun. And when competing in a jam-packed beverage aisle where the consumer wields control, the bottom line, as always, is flavour.

#### Function Fits Form

Whether flavourful, func-

### Lactate and Gluconate Fortification

The relationship between health and diet is an important issue discussed by authorities, scientists and doctors. Minerals have been proven to play a major role in prevention and treatment of certain health diseases, and in enhancing mental and physical performance of the human body. The awareness of the benefits of food products enriched with minerals is growing. An easy and comprehensible message on the packaging like ‘added calcium’ helps make a fortified product successful. In this case the consumer associates calcium with healthy teeth and bones, without the need to state this on pack.

The several different functions and health benefits of mineral salts in the human body allow many various marketing concepts for different target groups. For example calcium is commonly associated with reducing the risk of osteoporosis, however calcium also functions in muscle contraction and relaxation, as well as in increasing muscle tissue and bone density. This makes calcium a sensible addition to sport drinks. Another interesting aspect of calcium functionality is its role in reducing the erosion of tooth enamel, which occurs upon the contact of the tooth with acids. Calcium lactate as a dental friendly food additive would be an interesting concept for confectionery and beverage products targeted at children. Zinc is another example of the many effects that one mineral salt can have on the body. Clinical studies show that a supplementation with zinc gluconate can reduce the duration of the common cold by up to 42%. Zinc lactate can also prevent the formation of tartar and give a fresh breath, demonstrating why it is used in toothpaste.

Purac is the leading producer of lactic acid and mineral lactates and gluconates. For some food products the special functional properties of lactates and gluconates make them a highly suitable mineral source for easy product development. They are functional ingredients that have proven to be effective because they are highly bioavailable. In vivo tests have shown that calcium lactate is as effectively absorbed as calcium from milk. Purac mineral salts have a quite neutral flavour compared to substitutes, with Puracal XP being most neutral tasting. This is especially advantageous for application in mild flavoured beverages. Puracal has a very high solubility and dissolves very quickly, making it suitable for fruit concentrates and fast processing. Puracal XP is a calcium source that least interacts with other ingredients, resulting in stable food products. But for some products even this is not sufficient. The addition of calcium to protein rich food like soy milk is very difficult, as soluble calcium salts interact with the proteins resulting in undesired precipitation. Insoluble calcium sources will settle on the bottom of the pack. Purac have found a way of ensuring that the calcium remains suspended in the drink for the whole of its shelf life without sacrificing on texture.

