

## GUEST COLUMNIST

## Perspective: Ingredient technology

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## Milk as a model for future foods

Everyone with a food to sell tries to tout some magical health benefit. These benefits have become points of distinction in a very competitive food marketplace. Consumers have so many choices that manufacturers need to have a "hook" to lure the consumer toward a purchase. Some of these reputed health benefits have data behind them, some don't. In many cases, if there is even a hint of some health benefit delivered by a component in a food item, the marketing department of said food item jumps on the bandwagon. While there are some laws regarding health statements, they are easily bypassed. In the end, the consumer often is left con-

fused and misled.

In reality, health claims for foods are a dicey subject. Is there a way to scientifically identify specific health parameters influenced by food, the mechanisms by which this occurs and the circumstances whereby this effect can be optimized? So much of what is hyped today is based on serendipity rather than a plan of nature. These reported health benefits are blurred further by not knowing what is a bona fide health effect or just a response to a chemical produced by a vegetable trying to defend itself from being eaten. Is caffeine really a health benefit or an obnoxious toxin? Are the estrogen-like compounds in soy

really there to reduce heart disease or to make the consumer impotent, thus killing off a species preying on the soy plant? Who knows? The point is we need a model system for sorting it all out.

In steps my favorite food hero — milk. Milk was optimally designed to optimize an infant's ability to thrive. That double optima is intended. Nature doesn't waste materials. Not only is the amino acid profile of milk's proteins optimized for growth and development (by comparison, amino acids in soy protein cause a rise in insulin secretion), the proteins themselves are pleiotropic, meaning they conduct multiple tasks as they go through digestion. None of this happens by chance; rather, it all is powered by Darwinian pressure to maximize survival. The system that exists is the one that survived. It is the most efficient and effective.

I refer to milk as a model because it has achieved what food developers strive for — the ability to deliver complete nutrition in a tasty package. Looking at the human genome and specifically milk production elements, we can learn what turns on the synthesis of various components of milk and what effect those components have on the recipient. That will lead us to the mechanism of action. Once we understand the mechanism by which milk components deliver health benefits, we can search other foods for similar activity. Milk will be the stan-

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dard by which foods will be designed from a variety of raw ingredients. Nature has worked out the most effective system — all we need to do is figure it out. After that, product developers will have a field day. Once product developers and nutritionists understand how nature delivers health benefits in the most efficient way possible, alternatives can be devised.

I'm not here to preach to the choir about the merits of dairy products, but to take a view of milk from the perspective of a scientist trying to understand how best to deliver health benefits to consumers through product formulation — and still make it taste good. Milk already has achieved that goal. It took millions of years of evolution to get there, but it works. Other foods can be made to work in the same way, especially if one takes the open view of combining multiple sources of raw materials.

Obviously, man does not live by dairy products alone. But the secrets of nature to be learned from milk can open up new, exciting avenues to product developers drawing on all the food resources available to us and trying to deliver health benefits to consumers in a constantly-changing marketplace. **CMN**

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