

CHEESE MARKET NEWS

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Guest editorial/opinion:

Milk has something for every body

By Joseph O'Donnell, executive director, California Dairy Research Foundation

People with books to sell and honoraria to collect will shout, "Milk is for baby calves." But to these same people I'd like to ask, "Why is it OK to eat fungus growing on manure (mushrooms), or roots (carrots, beets, etc.) or beans that unless processed will kill you (soybeans)?"

In fact in order to eat many of the things we do eat, human ingenuity was required to learn how to process them or breed them to make them safe. Clearly, they were not designed for the sole purpose of delivering nutrition and health to mammals. Human innovation converted them to food.

People supporting sound nutrition policy readily see that milk is the one food designed by nature for the exclusive purpose of delivering nutrition and health to mammals. Still, as scientists daily seem to uncover new information supporting the role of milk and dairy products in nutrition, we must acknowledge that the composition of milks from all the species of mammals varies widely. For example, whereas human milk is relatively high in lactose, most marine mammals produce milk low or even absent in lactose. Even our commercial source, bovine, contains some components not to be found in human milk. The point is that these are all variations on a theme. Each milk is designed to optimally deliver nutrition and health to its specific species. Nevertheless, the purpose remains identical in all cases — deliver nutrition and health. At the core of it all is the genome.

The human genome has been sequenced. The bovine genome has been sequenced privately and is now being sequenced publicly. In a relatively short time we will know exactly what the differences are among the milks and why and how they can be modified.

The familiar products of fluid milk, butter, cheeses and the like will always be with us. New products will now include ingredients or formulations based on bovine milk of varying compositions. When you change the relative proportions of the milk's components you can change the kind of products you can make from the milk.

The easiest way to change the composition of milk is through nutrition of the cow. The second is through breeding. Not too far off in the future will be genetic engineering. In all three approaches one needs to understand how the milk genome responds to nutrition

changes or to breeding strategies. The payback from the investment in understanding the genome of milk or any living thing is that you gain insight that can greatly accelerate the ability of human innovation to improve our lives. Every great endeavor of humanity started with an idea, with innovation. Without innovation we would all still be living in a world that predated the Stone Age.

What are some "ideas" that researchers in the global dairy industry are desperate to pursue once they have milk produced to provide them with a unique starting material? Lactoferrin is hardly new but it is a growing market globally. The bottleneck is that concentration of lactoferrin in bovine milk is low. Fix that and lactoferrin could be cheaper and more plentiful and, in turn, the number of food formulations possible accelerated.

And let's talk hypertension. I know I just caught the attention of more than a couple of readers. For many years the dairy industry has known that something in milk promotes normal blood pressure. Yes, calcium is part of the equation but not all of it. For example, another part of the puzzle includes specific milk proteins digested in our intestine releasing certain peptides that act as Angiotension Converting Enzyme Inhibitors (ACE Inhibitors). Produce a milk high in these proteins, and I believe you will find a market.

A great resource for dairy is the fermentative lactic acid bacteria. Modify their environment by modifying milk composition and you start to get creative. Some of these friendly bugs contain the proteases that ferment the casein to produce the ACE inhibitors. In fact, last April, a product of this sort was introduced into the American market from Japan.

And let's not overlook the emerging understanding of the role of milk in weight management. Fully uncover the secrets of that observation and imagine the products that could be developed.

There really is no end to it. Every component of milk serves the mission of contributing to nutrition and health. The variations that exist among mammals point out the tremendous genetic reserve available for modification of milk from domestic animals that can be subject to human ingenuity. This can eventually provide a wide range of raw products to the R&D labs around the world and ultimately meet the needs of health-conscious consumers around the world.

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