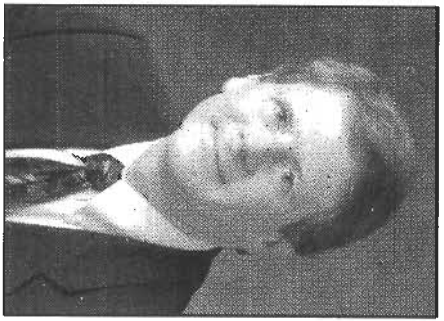




Perspective: Ingredient technology

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Constrained by chemistry

What are *saturated* fat, *trans* fat, *monosaccharide*, *disaccharide* and the like? It sounds like a question from the new SAT test but these are terms you see on everyday food labels. When did reading a food label become a chemistry test?

It started simply enough. The first nutritionists were chemists who were trying to figure out what food was made of. They gradually worked out some knowledge of lipid chemistry and carbohydrate chemistry, and they started to understand that all this nitrogen was doing in stuff they called protein. Early on, these chemists categorized food compounds using chemical terms familiar to them. Saturated fat meant those fatty acids not containing a double bond; monounsaturated fats con-

tributed to the time soon noted that well-nourished people were more resistant to disease. Nutritional deficiencies like scurvy were the low hanging fruit. Soon, components of food began their association with disease prevention. It wasn't too far of a stretch, then, to think about how food might promote disease as well.

As antibiotics reduced the devastation of infectious disease, more attention came to chronic afflictions like cardiovascular disease. Chemists looking at plaque in the arteries found cholesterol. They measured cholesterol in the blood and found an association with cardiovascular disease. Next they looked to where this cholesterol was coming from — food. As cholesterol was found in animal products, they naturally assumed a connection. Scientists then began drawing up all kinds of equations showing how saturated fat was linked to blood cholesterol and cardiovascular disease. What these scientists did not do was distinguish between the many different kinds of saturated fat. Never mind that milkfat contained significant levels of short chain saturated fat and very long chain saturated fats, to them it was all the same. They had not yet figured out that these are metabolized differently.

Today we still use those same chemical terms developed by early chemists. The same story holds for trans fats. While biologically-formed trans fats are very different than chemically-formed trans fats in

terms of metabolism, food labels fail to make that distinction. As part of the dairy industry you might think I loathe this system because it cheats the industry from increased sales. In truth, I do not like this system because I know too well how it cheats the consumer out of better options for nutrition. If you have any doubts, look at the level of obesity in this country today contrasted with the discovery that including dairy in the diet helps to maintain a healthy weight. Once again consumers were deceived, leading to a destructive unbalanced diet—in part because we use chemistry to define biology.

Human life contains many periods of development from beginning to end. We cannot rely on chemistry to define our dietary needs. The food industry needs to move from chemical constraints to biological opportunities. By doing so we add relevancy to our food products, whatever they are. With greater consumer understanding of food components the marketplace expands and diversifies and creates the kind of competition that benefits everyone.

It won't be easy. Devising new tests will be difficult. Nevertheless, we have access to more technology today than ever before. It can be done. The world is hungry. **CMN**

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