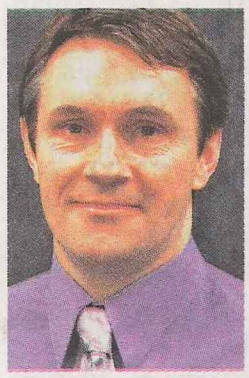
Cheesemaking Practice

Industry Should Carefully Look At Cost-Benefit Analysis Before Moving Ahead On Lower-Sodium Cheese



*Dr. John Lucey**

Sodium reduction has once again become a hot topic in the food industry. Nearly 30 years after the original drive for low-sodium products began, government agencies and regulators are again pushing industry for lower-sodium food products (e.g., up to 25 percent).

Meanwhile scientists continue to debate what the potential wellness impact would be if we could lower the sodium intake for the general population.

For example, a recent Cochrane Review (internationally recognized for their analysis of health care issues) of Sodium and Health (Taylor et al., 2011; *American Journal of Hypertension*) concluded that "Internationally, there are calls for a dietary salt reduction to be a major intervention for prevention and control of noncommunicable diseases. Voluntary reductions in hidden salt by the food industries and dietary advice to individuals are promoted as the best available interventions. Our review focuses on dietary advice and has not found robust evidence to support this approach."

A main area of concern for low sodium cheese has been the safety implications surrounding the reduction of salt added in the cheese making process. Additional concerns include flavor and texture variation potential, and labeling issues.

As regulatory agencies continue to push for lower-sodium cheese products, many in the industry would like more information regarding the risks of quickly moving existing cheese varieties to lower sodium levels.

There are concerns that we are being pushed to manage one dietary component while risking the potential negative consequences...

On December 1, 2011, the Wisconsin Center for Dairy Research (CDR), held our annual CDR Industry Team Research Forum in Madison, WI Over 80 members of the dairy industry and CDR staff were in attendance.

During the forum, I asked attendees to join me in a roundtable discussion focusing on the concerns, obstacles and future potential of lower-sodium cheese. Mark Johnson Ph.D., assistant director and senior scientist at CDR, Kevin Sweeney, corporate vice president R&D and technical services at Saputo Cheese, USA, and David McCoy Ph.D., vice president, product research, Dairy Research Institute (DMI), led the roundtable discussion.

While many groups and opinions were expressed during the discussion, it became clear that industry and researchers have a similar set of concerns when it comes to the production and sale of low-sodium cheese.

From an industry perspective, a vital concern is protecting the consumer and companies also want to protect their brands. There are concerns that we are being pushed to manage one dietary component while risking the potential negative consequences, especially when it is now recognized that currently all dairy products represent only 8 percent of total sodium intake in the diet. Thus, even a 15 percent reduction in dairy-related sodium levels would have no more than a 1 percent impact on overall dietary sodium intake.

It is important to recognize that cheese is essentially a preserved product that has evolved over hundreds, if not thousands, of years to result in a product that can be consumed without making people sick and without rapidly spoiling.

The current salt levels in cheeses and the methods of its application today are the result of this evolution. It is a critical component in successfully making high quality cheese varieties. It is a concern that these centuries of evolution may be cast aside and potentially both the industry and consumers could suffer.

• See **Lucey on Sodium**, p. 30

Lucey on Sodium

Continued from p. 4

Currently, researchers are exploring the level of sodium reduction that can be performed on different cheeses before this change would negatively impact flavor, texture or safety. With the results of these small-scale experiments authors are trying to make assessments of the food safety or performance impacts.

From an industry perspective the key is consistency of food safety and consistency of product performance in commercial applications given the normal manufacturing deviations that one would expect in manufacturing operations, in distribution conditions and extended shelf life at the end user.

Concerns were raised at the forum that regulators might look at elements of these one-off tests and draw broad conclusions that are not representative of normal production realities. Significant product quality issues would be disastrous for brand value and customer loyalty; a single food safety event could destroy a brand or a company.

By modifying the salt content, we change the environment of the cheese, and now bacteria may grow which would not grow under normal salt conditions. This impacts flavor and possibly safety.

Salt addition helps to expel moisture from curd and a reduction in salt level, unless counteracting measures are taken, results in higher moisture cheese that may have softer texture and reduced shelf-life. Brine salting of cheese also helps to cool hot curd, e.g. Mozzarella.

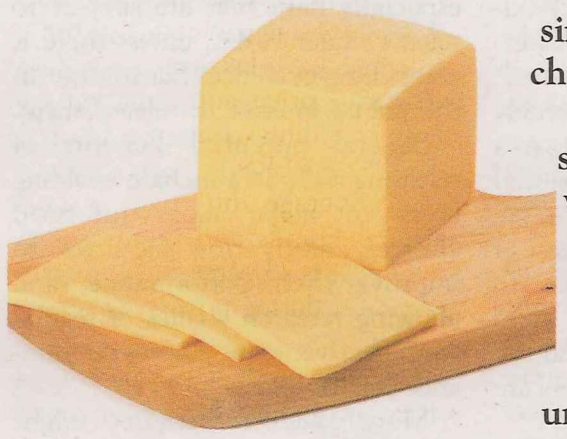
If cheese makers simply reduce the time cheese is left in brine in order to reduce its sodium level, then it would also result in cheese of a higher temperature which provides greater opportunity for undesirable bacteria to grow (compounded by the lower salt content).

While quality is a major issue for lower-sodium cheese, at the present time consumer demand for reduced- or low-sodium products is quite low.

Some consumers may try their first purchase of lower-sodium cheese, but if you want that second sale, it comes down to taste and what the consumer wants. Cheese characteristically has a salty taste and salt is what the consumer expects.

If you change the salt levels, then you change what consumers expect and that can change sales. The panel agreed, concluding that when it comes to consumers, "there is no such thing as better or worse, only different."

Statistics regarding the sale and consumer demand of low-sodium cheese show that demand is in the 1 to 2 percent range while low sodium snack cheeses have less than a 0.1 percent market share.



If cheese makers simply reduce the time cheese is left in brine in order to reduce its sodium level, then it would also result in cheese of a higher temperature which provides greater opportunity for undesirable bacteria to grow.

This seems to support the overarching idea that the low-sodium movement may not be stemming from a push by consumers, but from a push by government and regulatory agencies.

This movement is really being driven from the top down, rather than being driven from the bottom up, from consumers.

As the industry considers the safety and branding risks associated with lower-sodium cheese, they must also consider labeling and export issues. While one method of sodium reduction is to use a reduced amount in production, other methods include using potassium chloride in place of sodium chloride or using a synthetic compound or other chemicals to reduce sodium levels. Potassium can only replace about 20 percent of sodium before most consumers notice a distinctive chemical taste.

In any case, labeling any new additives becomes a necessary part of the sodium replacement process. When using phrases such as "low sodium," consumers may view the product as missing something and therefore, a different product than they are used to and potentially not as good.

Labeling is also expensive and while using certain methods of sodium reduction may prove to be cost effective, the cost of changing the label can outweigh the savings. In addition, the Food and Drug Administration (FDA) sets strict rules regarding the labeling of products containing additives and sets limits for products looking to be labeled as "low-sodium." Sodium labeling is compulsory in the United States.

Technically, low-sodium cheese must be no more than 280 mg sodium/100 grams. The term "lower sodium" has no legal definition, it just means lower than the typical sodium content in that type of cheese, but there is considerable commercial variation in the sodium levels for cheeses such as Cheddar and processed cheese.

Additionally, the export of low-sodium cheese poses several hurdles. While some regions have regulations regarding the compounds that can be used in cheese, others have regulations regarding the sodium content allowed, and several regions have regulations regarding both.

Johnson pointed out that the Asian market provides a great opportunity for the export of lower-sodium cheeses as there is a demand for cheese containing less than 1 percent sodium. In particular, Asian markets are interested in Mozzarella with low sodium, clean flavor and no acidity.

It is also important to emphasize to consumers that Swiss and fresh Mozzarella are existing low-sodium options that are already on the market. For those looking to eat or manufacture relatively low sodium- cheese with minimal risk, Swiss and fresh Mozzarella provide that benefit.

In addition, there are other nutritious dairy products, such as yogurt, that are naturally low in sodium.

So, while there is some room in the marketplace for lower-sodium products (keeping in mind that sodium reductions of up to 25 percent have been successfully achieved in Cheddar), it is still in the minds of many industry and research team members, whether the right questions regarding the safety and economics of producing low-sodium cheese have yet been answered.

In the end, it is important to remember that cheese is a living product; one which comes in many varieties and one which, even after thousands of years, we are still working to perfect and understand.

In keeping with our goal to keep consumers safe and educated, it is time to take a step back and carefully look at the risk/benefit analysis before moving forward and potentially damaging the good name of the industry and harming consumers in the process. JL

**Dr. John Lucey is director of the Center for Dairy Research at the University of Wisconsin-Madison.*