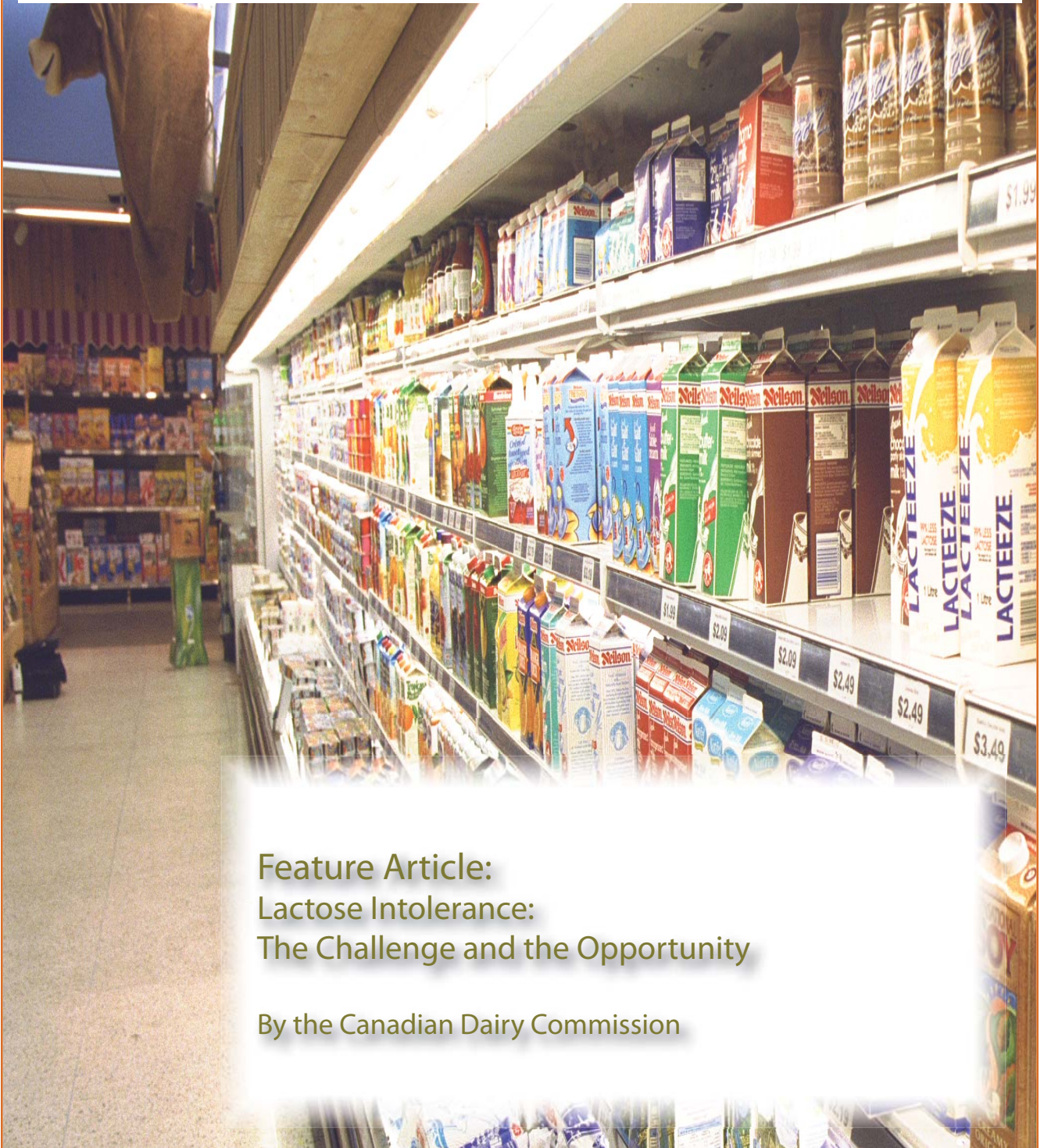


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The Experts' FORUM



Feature Article:
Lactose Intolerance:
The Challenge and the Opportunity

By the Canadian Dairy Commission



Lactose Intolerance: The Challenge and the Opportunity

Lactose intolerance is a condition that is said to affect between 25-40% of the Canadian population¹.

What is lactose intolerance?

Lactose intolerance is the inability to digest lactose, which is a natural sugar component found in milk (a disaccharide comprised of glucose and galactose). “Lactose is one of the least soluble of the common sugars, having solubility in water of only 17.8% at 25°C”². Under normal circumstances, most people produce an enzyme in the body called lactase which serves to break down the milk sugar which is then absorbed into the bloodstream. A person with lactose intolerance would not produce a sufficient amount of lactase in the body to break down the lactose and thus may end up suffering some nausea, gas, cramps, and other digestive problems.

As a result, many individuals with lactose intolerance have simply chosen to eliminate most, if not all, dairy products from their daily menu and cooking recipes. In many instances, the decision to eliminate dairy was made without knowing all the facts and the dairy alternatives that exist. With a fairly significant segment of the population affected by this condition, some food processors are concerned over the continued use of dairy ingredients in their food formulations and/or new product offerings and the new labeling regulations that require the mention of “allergens” such as milk ingredients.



Getting the facts, all the facts

There are so many reports circulated through the media and urban myths passed along from household to household that require careful review for sake of accuracy and completeness with regard to lactose intolerance.

One study of out of Great Britain points out that although there is a segment of the population that suffers from varying degrees of discomfort brought on by lactose intolerance, a variety of dairy products can still be consumed to the extent that they contain low levels of lactose. This is good news for a number of lactose intolerant consumers who can continue to enjoy the rich and natural calcium and protein benefits associated with milk. “With growing consumer demand for health benefits within food and dairy products, [this study’s] claims could allow processors [and further processors] to tap new markets for their products”³.

Opportunities for growth and innovation

Low lactose and lactose-free dairy products and ingredients exist and are readily available in Canada. Dairy products such as cheese (with the exception of the soft-ripened variety) yogurt, cottage cheese and milk protein concentrate are naturally low in lactose (See *Lactose levels in dairy products* Table). Some lactose intolerance votaries suggest that

cheeses that contain zero carbohydrates have less than 0.5g of lactose per serving. (Lactose, which is milk sugar, is the only carbohydrate in natural cheese.) Cheddars are a good place to start. As well, the harder the cheese, the less lactose it will have. There are two reasons for this. The first is because the liquid (whey) that drains out of the cheese as it ages and hardens contains virtually all of the lactose, and the second reason is that longer periods of fermentation mean that more of the sugars (lactose) have been broken down by the bacteria for energy. Therefore, more mature, harder cheeses like Parmesan, Gruyere, Comte, and sharper Cheddars will have much less lactose than softer, younger ones like brie, Gouda, and even some milder cheddars—particularly commercially-produced ones⁴.

In addition to the naturally low-lactose dairy products available, there are several Canadian dairy product manufacturers offering low-lactose or lactose-free versions of milk, cheese and some milk powders.

Lactose levels in dairy products

Dairy Product	% Lactose
Yogurt	1.5 - 6.8
Liquid milk	4.8
Cheese	
▪ Cheddar, Old	<0.5
▪ Swiss	0.5 - 2
▪ Parmesan	<0.5
▪ Mozzarella	0.2 - 2
▪ Cottage	0.5 - 4
Ice cream	3 - 10
Sour cream	2.8 - 4
MPC	
▪70	19
▪80	9
▪85	5.6
Skim milk powder	50.5
Buttermilk	4
Buttermilk powder	42.1

Supporting innovation in lactose reduced dairy and finished food products

Consumers are searching for increased health benefits from the foods they consume. It is well known that dairy products are viewed as healthy, and as an ingredient in finished food products which offers significant added value.

Adding dairy to food recipes and formulations or replacing substitutes with dairy ingredients can certainly enhance your products. With the emergence of lactose intolerance amongst North Americans, new opportunities for dairy exist. “There is big potential for lactose-free dairy products [and ingredients] amongst multicultural groups”⁵. And according to the Handbook of Functional Dairy Products, “low-lactose and lactose-free dairy products provide new market opportunities”⁶.



Reformulating or incorporating low-lactose dairy ingredients will allow companies to maintain the quality and health attributes associated with their finished food products and may serve to attract a whole new customer base.

The Canadian Dairy Commission's Matching Investment Fund (MIF) is available to dairy and food processors. It provides non-repayable contributions to help companies develop new and reformulated products using Canadian milk ingredients, on a matching investment basis.

Eligible companies can access financial support to help with a variety of product development issues in two key areas:

- **Consultation:**
Access to advice from specialists and experts in many areas of product development: management and marketing, dairy and food science and food processing.
- **Product Development:**
Support for product analysis, trials and technology transfer, which includes, but is not limited to, adoption of new or existing technologies, industrial scale tests, retrofitting of equipment, sample preparation, and packaging techniques.

Each approved project is eligible for up to \$250,000 in financial support on a matching basis. Projects that use milk protein concentrate or skim milk powder may qualify for higher levels of funding.

¹ Lactose Intolerance Fact Sheet, Canadian Digestive Health Foundation

² Varnam, Alan H. and Sutherland, Jane P. Milk and Milk Products, 1994, p.22

³ Neil Merrett, *Lactose intolerant can still eat some cheese*, Food Navigator.com, 19-Dec-2007

⁴ <http://www.tamaraduker.com/tag/lactose-content-cheese/>

⁵ Carina Perkins, *Multicultural market for lactose-free*, Food Navigator-USA.com, 23-Sep-2009

⁶ Editors: Colette Shortt and John O'Brian, p.85