by Phillip Tong

Lactose intolerance: a condition as old as the Stone Age

Processors of hard cheese and yogurt take note: Neolithic man figured out he could consume fermented milk without harm even if drinking milk caused him GI distress.

Recently a team of researchers has been studying questions about the history of milk in Europe. Their work to date has shown that lactase (beta-galactosidase) persistence (the retention of lactase activity after weaning that allows digestion of lactose into adulthood) likely occurred and became widespread thanks to a gene mutation in Neolithic times (5,000 to 10,000 years ago) in response to the consumption of a fresh cheese and not fresh milk.

In fact, recent analysis of perforated clay pot shards from over 7,000 years ago indicates the presence of milk-fat residues. This supports the notion that these pots were used to separate the high-lactose-containing whey from the fermented milk curd, which some arguably say is better described as a strained yogurt (naturally fermented), which may or may not have been cooked to facilitate whey separation.

Neolithic man knew from experience that drinking milk caused gastrointestinal illness that had to be avoided. Hence, when he discovered that he could consume fermented milk without harm, Neolithic man triggered a gene mutation that allowed for greater consumption of milk and dairy foods.

Today, individuals with lactose intolerance (also described as lactose maldigestion, lactase non-persistence or hypolactasia) can suffer many symptoms of gastrointestinal distress when they consume lactose-containing dairy products. However, the severity of symptoms depends on many factors including the lactose content consumed, colonic microflora adaptation, irritability of the colon and other components in the diet.

Demographics of lactose intolerance

While Northern Europeans and isolated pockets of groups in Africa and Middle East have very low levels of lactase non-persistence, it is estimated that 65% of the population is lactase non-persistent (have some degree of lactose maldigestion). In the United States some degree of lactose maldigestion occurs in over 50% of Mexican-Americans, 60% to 100% of Native Americans, 80% of African Americans, 90% of Asian Americans and 15% of Caucasians (See the "Handbook of Dairy Foods and Nutrition," CRC Press).

Additionally, there is some evidence that suggests that the severity of lactose intolerance may increase significantly in people after the age of 74.

Hence, there is a large and growing percent of the American population that needs solutions to their lactose maldigestion. Simply avoiding dairy products is one approach, but people who avoid dairy products generally have lower dietary intake of important nutrients such as calcium, riboflavin, potassium, phosphorus and magnesium.

Problem-free dairy foods

Evidence indicates that individuals who have lactose maldigestion can consume fermented milk products (like yogurt) without any problem. There are really three key factors:

1. Fermented milks like yogurt contain 20% less lactose than the unfermented starting milk because this amount of lactose is converted to lactic acid and other metabolic products during the fermentation process. (Note: many mistakenly state that in yogurt all the lactose has been fermented. This is not true!)
2. Improved digestion of lactose from microbial lactase because of three reasons: a) yogurt provides buffering from stomach acids to enhance microbial lactase survival; b) starter culture cell walls protect the microbial lactases from stomach acids; and c) the subsequent action of digestive enzymes and bile acid on microbial cell walls releases active lactase.
3. Because yogurt is a viscous product, gastric emptying is slower than some other dairy products and this may allow more time for lactose breakdown by intestinal lactase.

In other words, yogurt and other lactic-acid-based fermented milks have a built-in system to provide lactase where it is needed and provide sufficient digestion time to insure lactose digestion.

Research has shown that many lactose-intolerant individuals can still consume a glass of milk with a meal without any symptoms of lactose intolerance. Additionally, there are other dairy products like aged hard cheeses that are inherently low in lactose and there are technologies to produce lactose-free dairy foods to address this market segment.

But cultured milk manufacturers can tell consumers their product is ideally suited for individuals who are lactose-intolerant and who want the many other benefits of consuming fermented milk products. As the U.S. population continues to age and the non-Caucasian population continues to grow, those processors who position their products for the lactose maldigestor and tell consumers that cultured milk products naturally have been good for people with lactose maldigestion for 10,000 years may have a convincing story to gain a greater share of this fast-growing market segment.

Like many consumers, I have some lactase non-persistence. So, when it comes to food choices, I really like things that have worked for a long time. I am skeptical of the latest trendy fleeting products for my health. So if you tell me it has worked for 10,000 years, tastes good, does not empty my wallet and is convenient, then you will have me and others like me buying your product. ■

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