

Lactose Intolerance

Brown Health Services Patient Education Series

What is Lactose Intolerance?

Lactose intolerance is the inability to digest significant amounts of lactose, the predominant sugar of milk. This inability results from a shortage of the enzyme lactase which is normally produced by cells that line the small intestine. Lactose intolerance is a common problem. In most populations, the deficiency of lactase develops naturally over time usually after the age of 5. Lactose intolerance can also result from certain digestive diseases (such as celiac or Crohn's disease) or from mucosal injury of the digestive tract.

What are the symptoms of Lactose Intolerance?

Symptoms of lactose intolerance usually begin about 30 minutes to two hours after ingesting lactose. They include abdominal pain, bloating, gassiness, diarrhea, and vomiting. The abdominal pain may be crampy in nature and is often localized to the periumbilical area or lower abdomen. Borborygmi (rumbling noises) are often audible. Stools may be bulky, frothy and watery. The severity of symptoms varies among patients with lactose intolerance. Some individuals are able to tolerate more lactose than others.

How is Lactose Intolerance Diagnosed?

Often lactose intolerance is suspected if an individual has avoided lactose for a few days

and then eats a meal high in lactose and develops typical symptoms. One of two tests can be done in an outside lab to confirm the diagnosis.

- Lactose hydrogen breath test

Normally very little hydrogen is detectable in the breath. However, undigested lactose in the colon is fermented by bacteria producing hydrogen gas. The hydrogen is absorbed from the intestines, carried through the bloodstream to the lungs and exhaled. In this test the patient drinks a lactose loaded beverage, and the breath is analyzed at regular intervals. An elevated level of hydrogen occurring with symptoms is diagnostic for lactose intolerance.

- Lactose tolerance test

Used less often than the hydrogen breath test, in this test the patient fasts for a period and is then given a lactose loaded beverage to drink. Several blood samples are taken over a two hour period to measure blood glucose levels. Normally blood glucose should rise indicating that lactose has been broken down into glucose. If blood glucose does not rise it may confirm lactose intolerance. False positive and false negative results do occur with both these tests.

How is Lactose Intolerance Treated?

Lactose intolerance is relatively easy to treat. If the lactase deficiency is due to secondary causes such as disease or mucosal injury these issues need to be addressed.

More commonly, nothing can be done to

improve the body's ability to produce lactase but symptoms can be controlled through diet.

Individuals may learn by trial and error to restrict lactose to the level they are able to tolerate.

The highest concentration of lactose per serving is found in milk or ice cream. Cheeses, especially hard cheeses such as cheddar, provolone, parmesan, and gouda, generally contain much lower concentrations of lactose and may still be tolerated. One can substitute lactose free milk or soy milk for regular milk. Consuming dairy products with meals especially fat containing meals may help to dilute the lactose. Some people with lactose intolerance can eat yogurt, which naturally contains live active cultures that aid in digestion.

Commercial "lactase" enzyme supplement preparations such as Lactaid may be added to milk which hydrolyzes the lactose resulting in a sweeter taste. Lactase capsules can be sprinkled on or taken orally with lactose-containing food.

Maintaining adequate intake of calcium and vitamin D can be challenging if one is limiting dairy products. Lactose-free and plant based beverages such as soymilk contain the calcium and vitamin D equivalent of dairy milk. Plant based milks such as almond and cashew milk are also fortified with calcium and vitamin D, but it's important to note that they do not contain protein. In addition to non-dairy milks, vitamin D is also found in egg yolks and absorbed through the skin from sunlight exposure in short increments of time (5-15 minutes before sunscreen is applied). Calcium and vitamin D supplements may be recommended for those that do not consume adequate amounts of lactose-free or non-dairy alternatives.