

## Lactose Intolerance: What Is It And How Is It Diagnosed?

Lactose, commonly known as “milk sugar”, may not be digested well if you are either born with absent or low levels of the enzyme lactase or if your intestine has been injured resulting in absent or low levels of lactase. Lactose is a disaccharide or two sugars linked. It is a combination of the two sugars, glucose and galactose. If intestines lack or are deficient in lactase you will not adequately digest lactose and you will experience gas, bloating, abdominal cramps and diarrhea shortly after eating something containing lactose. The lactase enzyme is on the surface of the intestine cells where it is very vulnerable to intestinal injury. Some people are born with absent or low levels of lactase, therefore have congenital alactasia or hypolactasia. Between 80-100% of people of Asian, Native American, or African ancestry are lactose intolerant for this reason compared to only 15% of those of Northern European ancestry. Secondary or acquired lactose intolerance can develop after any injury of the small intestine. Common causes include infection (e.g. after severe “stomach flu” or gastroenteritis), medication (e.g. chemotherapy), radiation, malnutrition, food intolerance (e.g. Celiac disease) or overgrowth of bad bacteria. The intestine may be temporarily damaged and recover tolerance for lactose. Permanent or ongoing damage can result in prolonged intolerance similar to congenital lactose intolerance. The levels of lactase enzymes are highest in young children and diminish with time, often by teenage years when symptoms may become prominent. Lactose intolerance is commonly diagnosed based on a history of symptoms of gas, bloating, abdominal pain or cramps and diarrhea that occur within minutes to a couple of hours of ingestion of dairy products. Since lactose can be in other foods not considered dairy, some people may not recognize a pattern that they associate with lactose. Others may be misdiagnosed as having irritable bowel syndrome. The diagnosis is made formally by either a hydrogen breath test or lactose tolerance test. Measuring hydrogen in the breath after ingestion of lactose that has been radio labeled or marked with a detectable carbon fragment is known as the hydrogen breath test. Lactose tolerance tests measure several blood sugar levels after ingestion of lactose looking for absence of an expected normal rise. Though a biopsy of the intestine can test for presence of the enzyme, this is expensive, invasive and rarely available outside of research labs. Non-specific tests such as stool acidity test (pH) or lactose challenge are commonly utilized along with a clinical history and a trial of a lactose free diet to make the diagnosis. The stool is normally neutral to alkaline in pH unless sugars are fermented in the intestine or excessively acidic foods or beverages are ingested. Maldigested lactose fermented by bacteria in the intestine produces acid and lowers the stool pH. Stool pH can be easily and inexpensively measured. However, a low or acidic stool pH is not specific for lactose intolerance since other maldigested sugars can be fermented resulting in increased stool acidity. Lactose challenge is simply eating or drinking high lactose containing foods or drinks and noting the presence or absence of symptoms. The “poor man’s” lactose challenge is ingesting a quart of skim milk. Fat slows emptying of the stomach and delays the delivery of food or drink to the small intestine. Skim milk’s lack of significant fat permits rapid passage from the stomach to small intestine of a large load of lactose. If someone is lactase deficient they will have rapid onset of symptoms of bloating, gas, abdominal cramps and diarrhea. The absence of any of these symptoms after a quart of skim milk makes lactose intolerance very unlikely. Lactose intolerance treatment involves avoiding lactose-containing foods, not just dairy, since many other foods have lactose added. Alternatively, lactase enzymes may be taken with or just before eating lactose containing foods but their effectiveness is somewhat limited. Lactose free milk may also be used. Individuals who do not have conditions that affect the intestine, intestinal damage or fit the usual ethnic pattern associated with lactose intolerance that have lactose intolerance or symptoms suggestive of lactose intolerance should be screened for Celiac disease. This common condition is frequently missed and when untreated is highly associated with lactose intolerance. One study noted that 24% of people with lactose intolerance had undiagnosed Celiac disease and lactose intolerance was their only manifestation of Celiac disease. Lactose intolerance is common. It may cause bloating, gas, abdominal cramps and diarrhea. The symptoms may be misdiagnosed as irritable bowel syndrome. Celiac disease commonly causes lactose intolerance. Many lactose intolerant people have undiagnosed Celiac disease.

### About the Author

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