

# LACTOSE INTOLERANCE

## The key answers for patients



### IN BRIEF

- Lactose intolerance can result from a natural physiological phenomenon. Lactase activity decreases from infancy until adulthood and may lead to a deficiency. This intolerance affects nearly three-quarters of the world's population with a frequency varying geographically by country and region and by the age of the individual.
- Lactase deficiency causes maldigestion of lactose, which often leads to total or partial avoidance of milk and dairy products, which is not always justified. It can entail additional difficulty in satisfying the child's or adult's calcium needs and risks their bone health.



### 3 MAIN QUESTIONS TO DISCUSS WITH YOUR PATIENT

#### 1 SELF-DIAGNOSIS? → present an objective and definitive diagnosis.

##### What is lactose intolerance?

The synthesis of lactase, the enzyme that digests lactose (a naturally occurring sugar in milk and dairy products), tends to decrease with age. The body is no longer able to hydrolyze all the lactose. This results in the malabsorption of lactose, which is fermented in the colon leading to the production of organic acids and gas.

##### What are the symptoms?

Digestive disorders may be more or less severe, depending on the patients residual lactase activity and the quantities of lactose consumed: bloating, flatulence, cramps, abdominal pain, diarrhea, nausea, etc.

##### How to respond to self-diagnosis?

Usually, a self-diagnosis is based on the appearance of symptoms following the ingestion of dairy products, particularly milk. However, this diagnosis is often mistaken, as many reasons can cause similar symptoms (for example, viral or bacterial infections, urinary infection, irritable bowel syndrome, etc.). Unfortunately, such a mistake leads to the avoidance of dairy products with a higher risk of not adequately covering calcium needs.

The first approach consists of removing from the diet, for two weeks, all products containing lactose in order to see whether the symptoms disappear. You can then recommend the moderate re-introduction of small amount of dairy product (yogurt, cheese) in order to see whether the symptoms reappears. In most cases, your patient will experience easing of symptoms after a few days.

- Contrary to conventional wisdom, the consumption of dairy products can be maintained, subject to certain hygiene and dietary rules. Incorporating dairy products, including yogurt, improves the quality of the diet, and reduces nutrient deficiencies.
- Yogurt has the particular characteristic of being well tolerated by individuals who find lactose difficult to digest. It allows them to get all the nutritional benefits of milk. It is therefore a useful alternative to milk to meet daily calcium needs and to help prevent osteoporosis. This is why the regular consumption of at least one serving of yogurt per day is highly recommended. Why yogurt? It improves lactose digestion thanks to its specific live cultures (*Streptococcus thermophilus* and *Lactobacillus bulgaricus*), which remain active all the way through the digestive tract. Furthermore, its thicker-than-milk consistency leaves more time for the residual lactase to act.

#### Info +

One double blind study showed that more than half of lactose-intolerant individuals reported gastrointestinal symptoms after consuming lactose-free milk as well as after consuming milk with 7 g of lactose, which indicates that some may wrongly attribute their symptoms to lactose intolerance.

#### If the symptoms persist, only two tests can confirm the diagnosis objectively:

1- The **hydrogen breath test** measures the presence of hydrogen in the breath exhaled by the patient before and after ingesting 50 g of lactose in solution. The undigested lactose in the small intestine turns into gas under the action of colonic bacteria, including hydrogen. This hydrogen then passes into the blood circulation and reaches the lungs where it is exhaled along with the air. The higher the hydrogen level in the exhaled air is, the less efficient is the lactose digestion in the small intestine and therefore the less efficient the body's ability to produce lactase.

2- The **lactose tolerance test** measures glucose levels in the blood after ingesting a set amount of lactose. Remember that lactase splits lactose into glucose and galactose, the latter being then transformed into glucose. Glucose penetrates into the blood and raises the patient's blood sugar level. If the lactose is imperfectly digested, blood sugar does not rise.

#### Sources

Jimenez Ortega Al et al; Nutritional problems related to calcium intake in children with lactose intolerance; Ann Nutr Metab; 2013; 63 (suppl 1): 757

Zaitlin P, Dwyer J, Gleason J.R; Mistaken Beliefs and the Facts about Milk and Dairy Foods, Nutrition today; 2013; 48(3): 135-145

Etude nationale nutrition santé (ENNS). 2006. Available at: [http://opac.invs.sante.fr/doc\\_num.php?explnum\\_id=3481](http://opac.invs.sante.fr/doc_num.php?explnum_id=3481). Accessed May 2012.

Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans (DGAC). 2010. Available at: <http://www.cnpp.usda.gov/dgas2010-dgacreport.htm>. Accessed May 2012.

Heyman MB. Lactose intolerance in infants, children, and adolescents Pediatrics. 2006;118(3):1279-86.

Martini MC et al. Lactose digestion from flavored and frozen yogurts, ice milk, and ice cream by lactose-deficient persons. Am J Clin Nutr. 1987;46(4):636-40.

De Vrese M et al. Probiotics-compensation for lactose insufficiency. Am J Clin Nutr. 2001;73(2Suppl):421S-429.



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### 2 HOW TO MAINTAIN CALCIUM INTAKES → practical advice\* for reconciling “calcium intake” with “lactose intolerance”.

- **Opt for low-lactose dairy products such as hard cheese or better-tolerated products like yogurt.** The drying process involved in making mature cheeses eliminates lactose, and the specific live lactic cultures in yogurt aids its digestion.
- **Opt for dairy as part of a meal or snack, or include it in a recipe.** Combining dairy with other foods that slow down gastric emptying, such as fatty or high-fiber foods, can aid digestion and reduce symptoms.
- **Spacing out food intake** over the course of the day can let you increase the quantities consumed. One double-blind study found that people who are lactose-intolerant can drink two glasses of milk a day (one at breakfast and one at dinner).
- **Avoid milk on an empty stomach,** and opt for whole, chocolate or lactose-free milk which is more easily digested than low-fat or skimmed milk. And as a last alternative, why not go for calcium-enriched vegetable juice or enzymes in the form of food supplements that permit lactose digestion.
- **Lastly, for people who really can't stand milk,** they will risk nothing if they consume less than 12 g lactose per meal (equivalent of 250 ml or ~8 ounces of milk). Studies have shown that most people who are lactose-intolerant can, however, tolerate moderate amounts of lactose without suffering gastrointestinal symptoms.

\*General advices to be adapted case by case

### 3 INTERESTED IN YOGURT? → remind patients that yogurt is digestible in cases of lactose intolerance.

- Thanks to its specific cultures and its thicker-than-milk texture, yogurt is well tolerated by individuals who have trouble digesting lactose. Yogurt also allows them to get all the nutritional benefits of milk. It is a useful alternative to help cover daily calcium requirements and thereby help prevent osteoporosis. This is why the regular consumption of at least one serving of yogurt a day is highly recommended.
- Not all dairy products in servings are yogurt: it is important to read labels carefully. The product must contain the two cultures specific to yogurt (*Streptococcus thermophilus* and *Lactobacillus bulgaricus*).
- Choose carefully to suit the patient's needs and moment of consumption (fat content, sugar content, natural, with fruit, calcium enriched, vitamin D enriched, high in protein, drinkable or spoonable, etc.)
- The ideal is to eat yogurt regularly as a habit: one yogurt a day alternating natural or with added sugar or fruit to take advantage of all their nutritional benefits and for even greater pleasure! This helps to achieve the recommended goal of at least three dairy products a day as part of an agreeable and balanced diet.

#### Info +

The benefits of yogurt cultures have been confirmed by positive advice from the European Food Safety Authority (EFSA): “Live yoghurt cultures improve lactose digestion in individuals with lactose maldigestion.”<sup>(9)</sup>



## MOVING FURTHER

#### There are three forms of lactose intolerance:

- **Lactose intolerance due a congenital lactase deficiency** is a very rare hereditary disorder. It is present from birth and prevents the body from producing the lactase needed to assimilate lactose. The only treatment is lifelong avoidance of lactose.
- **Primary lactose intolerance** is the most frequent. Lactase production naturally declines for most people as they grow up (generally between ages 2 and 12). It concerns 60% to 100% of people in Asia, the Middle East, certain African countries and North America. And only 2% to 30% in Northern Europe, India, and a number of tribes in Africa.
- **Secondary lactose intolerance** can occur after certain gastrointestinal disorders. It can appear after the presentation of irritable bowel syndrome, Crohn's disease, or more often viral gastroenteritis.

Generally, secondary lactose intolerance is only temporary, but the symptoms can persist for a year.

#### • What about allergy?

Do not confuse lactose intolerance with allergy to cow's milk protein. Allergy to cow's milk protein is an immune response to a minute quantity of cow's milk protein, and is usually detected in early childhood. It only affects 2% to 6% of infants and disappears in two-thirds of cases around the age of 2 or 3. In France, this affects 0.6% of children under the age of 15 (and is far less prevalent than egg or peanut allergies). Very few adults (0.1% to 0.5%) are allergic to milk. The symptoms are mainly digestive and, depending on the individual, may be accompanied by, for instance, muscle or joint pain, headaches, nausea, lethargy, acne, sore throat.

#### Sources

Miller GD et al. The importance of meeting calcium needs with foods. *J Am Coll Nutr.* 2001;20(2 Suppl):168S-185S. Dietary Guidelines for Americans, 2010. Available at: [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov).  
Wilton JM. Yoghurt a top health food. Blackwell Scientific Publication. 2004; pp. 36-44.  
EFSA Journal. Scientific Opinion on the substantiation of health claims related to live yoghurt cultures and improved lactose digestion. 2010;8(10):1763-80.  
EFSA Journal. Scientific Opinion on lactose thresholds in lactose intolerance and galactosaemia. 2010;8(9):1777-805.

Wilt TJ et al. Lactose intolerance and health. *Evid Rep Technol Assess (Full Rep).* 2010;(192):1-410.

National Nutrient Database for Standard Reference. Available at: <http://ndb.nal.usda.gov/ndb/foods/list>. Accessed May 2012.

Di Stefano M et al. Lactose malabsorption and intolerance and peak bone mass. *Gastroenterology.* 2002;122(7):1793-9.

