

What is lactose intolerance?

Lactose intolerance is the term used to describe the inability to digest the milk sugar lactose. The symptoms of lactose intolerance are intestinal gas, abdominal distension, flatulence and watery diarrhea.

How does Lactose Intolerance develop?

Primary cause:

Lactose intolerance is due to low levels of the enzyme lactase that breakdowns the lactose in mammalian milk. When we are born and our only source of nutrients is mother's milk we have large amounts of this enzyme. After weaning when milk is no longer the only the source of food, the levels of this enzyme naturally and normally decreases. How far it decreases determines how much lactose (usually milk) can be consumed without producing symptoms.

Individuals are left with different amounts of the enzyme that accounts for why

- not everyone suffers from lactose intolerance,
- the symptoms of lactose intolerance are not the same in all sufferers
- the amount of lactose that can be consumed before producing symptoms varies amongst individuals

Other causes:

Lactose intolerance can also develop following certain illnesses and medical conditions that result in damage to the intestines where the enzyme is produced. Some of these conditions are:

- Gastroenteritis, diarrhea
- Parasitic infections e.g. Giardia
- Inflammatory bowel disease
- Coeliac disease
- Other food intolerances
- Cow's milk allergy
- HIV/ AIDS
- Cancer therapies
- Intestinal surgery
- Pharmaceuticals such as the antibiotics neomycin and kanamycin

These conditions may result in the temporary loss of lactase enzyme activity, which can lead to lactose intolerance. There is a rare genetic disorder where low or absent lactase enzyme activity is present from birth.

What is the difference between milk allergy and lactose intolerance?

Milk allergy is an immune system reaction to the milk protein lactalbumin, while lactose intolerance is an inability to adequately digest the sugar lactose, found in milk.

How is lactose intolerance diagnosed?

Diagnosis of lactose intolerance is based on a variety of biochemical tests and the appearance of symptoms. The most common is the Lactose Tolerance test where following dietary exclusion of dairy products, the individual is challenged with a standard dose of lactose. Following ingestion, the rise in lactose breakdown products and the appearance of signs and symptoms are monitored.

What are the various sources of lactose?

Lactose is present in infant formulas, human and cow milk, and dairy products. Lactose is also used as an additive in foodstuffs such as baked goods, cereals and soft drinks. The major

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sources of dietary lactose in humans are dairy products and composite foods with dairy product added.

Most matured or ripened cheeses contain little lactose since most is removed in the whey during manufacture. Unripened cheese such as cottage cheese may contain significant amounts of lactose. Yogurt manufactured from milk may have extra milk solids added, and the lactose content will vary.

As lactose has less sweetness relative to other sugars such as sucrose, fructose and glucose, it is widely used by the food industry and is found in a wide variety of non-dairy/milk products such as some breads, biscuits, confectionery, cereals, nutritional supplements as well as pharmaceutical formulations.

Approximately 13% of registered drugs and 2% of listed drugs in Australia contain lactose. Ingredients to watch out for in commercial products are those containing non-fat milk solids, whey and whey protein.

Approximate Lactose Content of common foods per 100g serving

Food

Lactose Content (g/100g)

Soy drinks

0

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Goat milk

3.6

Cow's milk, whole

4.6

Cow's milk, skim

5.0

Human milk

6.8

Chocolate, milk

9.1

Cheese-cheddar, edam, gouda

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0

Yogurt, natural whole

4.7

Cream

2.1-4.9

Ice-cream

4.7-5.9

Ice confection

6.5

White/wholemeal bread

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0.0

White milk bread

0.9

Margarine, regular

0.5

Butter, regular

1.0

Plain or fruit bun

0-0.1

Chocolate, dark

0.4

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Biscuits, plain sweet

0-0.5

Plain cake

0.6-0.7

Quiche

1.7

Coca powder

0.0

Milo powder

12.7

Ovaltine powder

21.2

What other factors contribute to the development of lactose intolerance?

Individual reactions to a particular lactose load vary and depend on many factors such as:

- How much of the lactase enzyme activity remains.
- The dose of lactose. Small doses are usually better tolerated than large doses
- Symptoms may vary depending on the type of milk consumed, i.e. full-cream, fat-reduced, skim milk, evaporated milk etc.
- Presence of other foods such as dietary fiber, consumed with a lactose/milk load may reduce intolerance symptoms.
- The general health of the intestine and intestinal microflora

- Age. Children diagnosed with lactose intolerance may be more able to tolerate lactose than an adult.
- Cultural factors can play a role in whether or not a symptom is reported and investigated.

So what can I do if I have lactose intolerance?

Some dietary modification to consider

- Avoid high lactose containing foods and beverages: Individual tolerance should be determined and monitored. Foods to avoid are those high in lactose such as all forms of milk, yogurt, ice-cream, cream, cheese, milk chocolate, milk-based drink flavorings and any commercial or home made foods that contain milk, milk solids, whey or lactose.
- Use lactose-free milk substitutes: Lactose free soy milk may be used as necessary

and is usually well tolerated.

- Use lactose-reduce/hydrolysed products as necessary: Lactose hydrolysed milk is generally better tolerated.
- Fermented milk products: Yogurt may be taken in small amounts as the yogurt culture will partially digest the lactose. While this is generally true it should be noted that the lactose concentration does vary in different yogurts.
- Avoid high doses of lactose in short delivery times: Small doses over a longer period are likely to be better tolerated.

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For more information on lactose intolerance

[US NIH Information](#) . The site has a good leaflet and provides links to authoritative sites. In particular [NIH Link](#) which expands the topic somewhat for serious researchers.

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