

AI-03109 Lactose Intolerance 00027

Owner	© Rigel Arcayan
Tags	MD OE
Created time	@October 26, 2025 3:09 PM

GI System vs LI (00027) explain Lactose Intolerance. List 22 things I can do with LI onset.

Here's a cleaned-up, structured, and professional version of your content:

Lactose Intolerance: Overview, Mechanism, Management, and Role of Lactaid (Tilactase)

Definition

Lactose intolerance is the onset of gastrointestinal symptoms—abdominal pain, bloating, flatulence, and diarrhea—after consuming lactose-containing foods due to insufficient lactase enzyme activity in the small intestine. Lactose, a disaccharide (glucose + galactose), is normally hydrolyzed by lactase at the brush border of enterocytes in the proximal small intestine.

Pathophysiology

1. Cause of Lactase Deficiency

- Primary (most common): Genetically programmed decline in lactase activity after weaning (lactase non-persistence).
- Secondary: Damage to the intestinal mucosa from conditions such as infection, celiac disease, inflammatory bowel disease, or chemotherapy.

2. Mechanism of Symptom Development

- Undigested lactose passes into the colon.
- Colonic bacteria ferment lactose, producing gas and short-chain fatty acids.

- Increased osmotic load draws water into the colon.
- Result: Bloating, flatulence, abdominal pain, and diarrhea.

Management Strategies

Strategy	Description
Dietary lactose reduction	Mainstay treatment; avoid or limit dairy products.
Lactose-free or plant-based alternatives	Soy, almond, oat milk, or lactose-free dairy.
Lactase enzyme supplements (e.g., Lactaid/tilactase)	Taken with meals to pre-digest lactose.
Dairy products with lower lactose content	Yogurt with live cultures, aged cheeses.
Gradual lactose reintroduction	Helps promote colonic microbial adaptation.
Probiotics/prebiotics	May enhance microbiome tolerance and reduce symptoms.
Nutrient monitoring	Ensure adequate calcium and vitamin D; supplement if needed.
Label awareness	Avoid hidden lactose in processed foods and medications.
Dietitian consultation	Personalized guidance for long-term nutrition management.

Molecular Mechanism of Lactaid (Tilactase)

- Tilactase is a β -D-galactosidase enzyme, typically derived from microbial sources.
- When consumed with lactose-containing foods, it hydrolyzes the β -1,4 glycosidic bond in lactose.
- This produces glucose and galactose, which are absorbed in the small intestine.
- Result: Prevents lactose from reaching the colon, thereby reducing fermentation and symptoms.

Summary

Lactose intolerance arises from lactase deficiency, leading to malabsorption of lactose and fermentation by colonic bacteria. Management focuses on dietary modification, enzyme supplementation, microbiome support, and nutritional adequacy. Lactaid (lactase) works by enzymatically breaking down lactose in the gut, compensating for endogenous lactase and improving symptom control.

Would You Like to Continue?

Would you like me to summarize the latest clinical evidence on the efficacy and safety of lactase enzyme supplements (e.g., Lactaid) compared to dietary modification alone in improving symptoms and quality of life?

Let me know if you'd like:

- A visual summary (table or infographic)
- Patient education handout
- Inclusion of diagnostic tests (hydrogen breath test, lactose tolerance test)
- Comparison of primary vs. secondary lactose intolerance