FOOD INTOLERANCES IN CONTEXT OF GLOBAL SUSTAINABLE DEVELOPMENT

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Introduction

A food intolerance is difficulty digesting certain foods and having an unpleasant physical reaction to them.

It causes symptoms, such as bloating and tummy pain, which usually happen a few hours after eating the food.

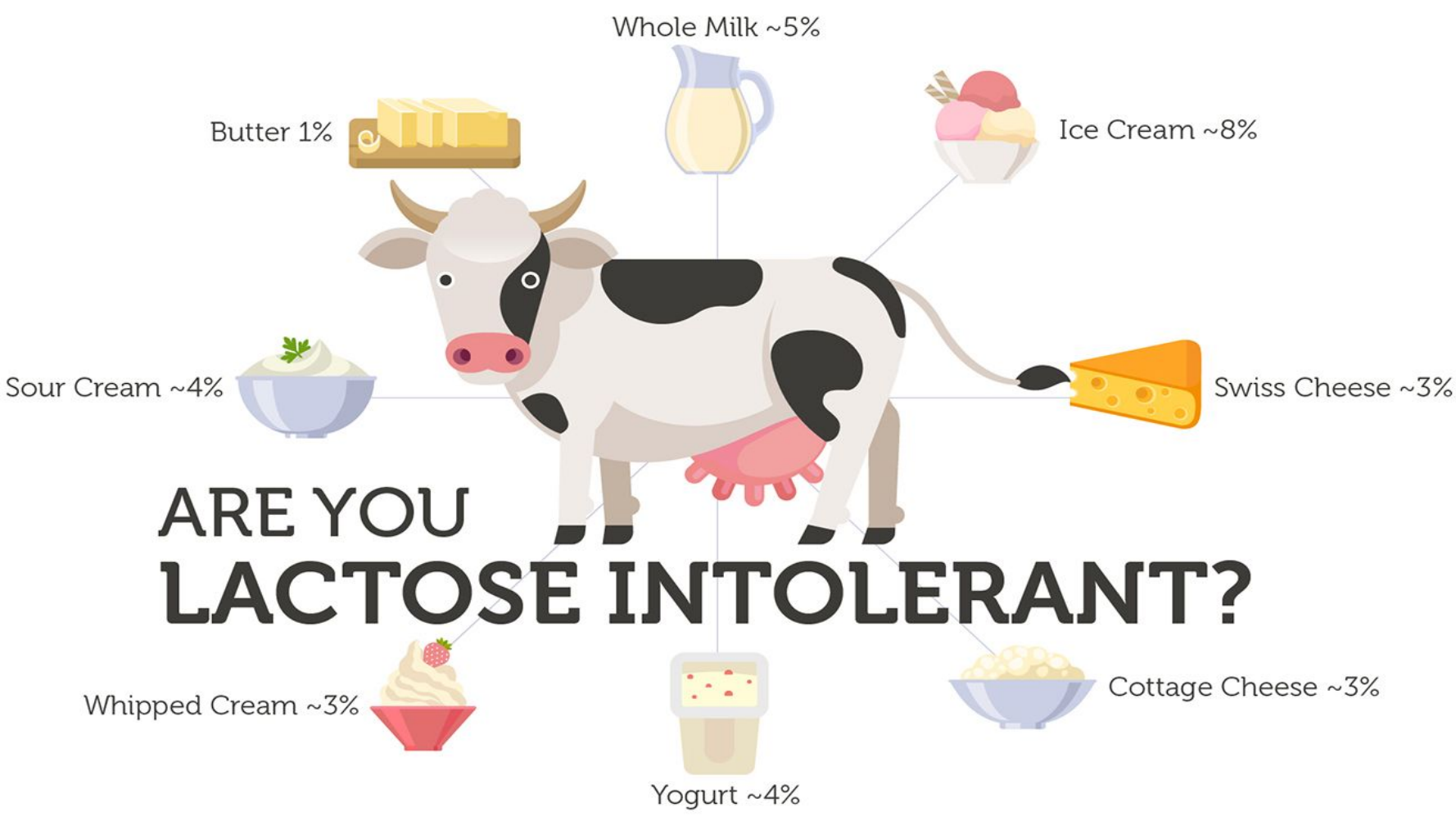
Food intolerance is a chemical reaction that some people have after eating or drinking some foods; it is not an immune response. Food intolerance has been associated with asthma, chronic fatigue syndrome and irritable bowel syndrome (IBS).

Lactose intolerance

People with lactose intolerance are unable to fully digest the sugar (lactose) in milk. As a result, they have diarrhea, gas and bloating after eating or drinking dairy products. The condition, which is also called lactose malabsorption, is usually harmless, but its symptoms can be uncomfortable.

Too little of an enzyme produced in your small intestine (lactase) is usually responsible for lactose intolerance. You can have low levels of lactase and still be able to digest milk products. But if your levels are too low you become lactose intolerant, leading to symptoms after you eat or drink dairy.
Most people with lactose intolerance can manage the condition without having to give up all dairy foods.

Primary (or hereditary) type of lactose intolerance (hypolactasia) is caused by decline of lactase expression, which usually occurs in 2-12 years, though can happen in adolescence. The frequency of occurrence in adults in Europe fluctuates from 4% to 86% and mainly depend on population. The clinical symptoms of disease are abnormalities in gastrointestinal tract functioning (diarrhea, gas bloats, nausea etc.), that are caused by lactose digestion by bacteria in the colon.These genetic study aims to reveal inclination to onset of hypolactasia in adults.*
Genetical inclination to lactose intolerance is confirmed with C/C in position -13910 LCT gen; C/T genotype in rare cases causes hypolactasia, usually compensated, with mild clinical manifestation.
Outside of Europe, several alleles are described, that are associated with lactose intolerance. Unlike biochemical test, genetic test allows to distinguish primary and secondary lactase deficiency reliably. If genetic predisposition to lactose intolerance has been determined, it is recommended to test other parameters, that are associated with disease.


Whole Milk ~5%
Butter 1%
Ice Cream ~8%
Sour Cream ~4%
Swiss Cheese ~3%
ARE YOU
LACTOSE INTOLERANT?
Whipped Cream ~3%
Cottage Cheese ~3%
Yogurt ~4%

Worldwide prevalence of lactose intolerance in recent populations (schematic)

Fructose intolerance

Fructose is a sugar found naturally in fruits, fruit juices, some vegetables and honey. Fructose is also a basic component in table sugar (sucrose), and high-fructose corn syrup is used to sweeten many processed foods and beverages.

When your digestive system doesn't absorb fructose properly, it can cause abdominal pain, diarrhea and gas.

People who have fructose intolerance should limit high-fructose foods, such as juices, apples, grapes, watermelon, asparagus, peas and zucchini. Some lower fructose foods — such as bananas, blueberries, strawberries, carrots, avocados, green beans and lettuce — may be tolerated in limited quantities with meals.

Genetic causes of fructose intolerance

Negative fructose intolerance

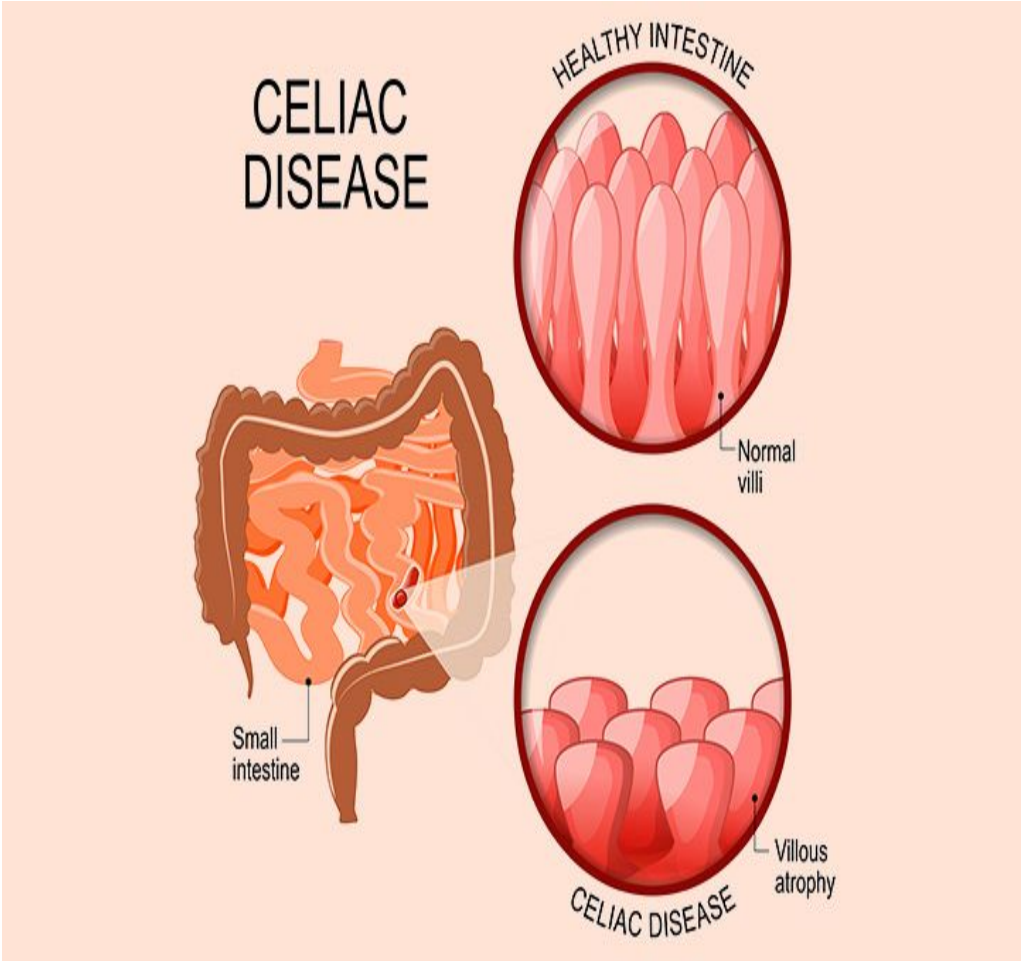
*No evidence of pathogenic mutations in the examined gene areas.The genetic investigation covers the three most common mutations: A149P, A174D and N334K. This will be 90% of the known HFI-associated mutations excluded, what a hereditary fructose intolerance (HFI) here makes unlikely. I**n the case of urgent clinical suspicion** or **positive family anamnesis** we should search for exons in these areas to exclude rare HFI-associated mutations.*

Celiac disease

Celiac disease, sometimes called celiac sprue or gluten-sensitive enteropathy, is an immune reaction to eating gluten, a protein found in wheat, barley and rye.

If you have celiac disease, eating gluten triggers an immune response in your small intestine. Over time, this reaction damages your small intestine's lining and prevents it from absorbing some nutrients (malabsorption). The intestinal damage often causes diarrhea, fatigue, weight loss, bloating and anemia, and can lead to serious complications.


CELIAC DISEASE – SYMPTOMS
Headache
Nausea
Weight loss
Fatigue
Gastrointestinal distress
Bloating
Stomach pain
Diarrhea


CELIAC DISEASE
HEALTHY INTESTINE
Normal villi
Small intestine
Villous atrophy
CELIAC DISEASE

DIAGNOSTIC AND MANAGEMENT

*The **golden standard** for celiac disease diagnosis is **duodenal mucosal biopsies**. Both serology and biopsy should be performed on a gluten-containing diet.*

*The **treatment** for celiac disease is primarily a gluten-free diet (GFD), which requires significant patient education, motivation, and follow-up.*

INTESTINE BIOPSY – Diagnosis of celiac disease requires a small intestinal biopsy examination, and a specimen can be readily obtained during routine upper-gastrointestinal endoscopy. Duodenal biopsy examination should be performed in all patients suspected of having celiac disease and all those who merit exclusion of celiac disease.

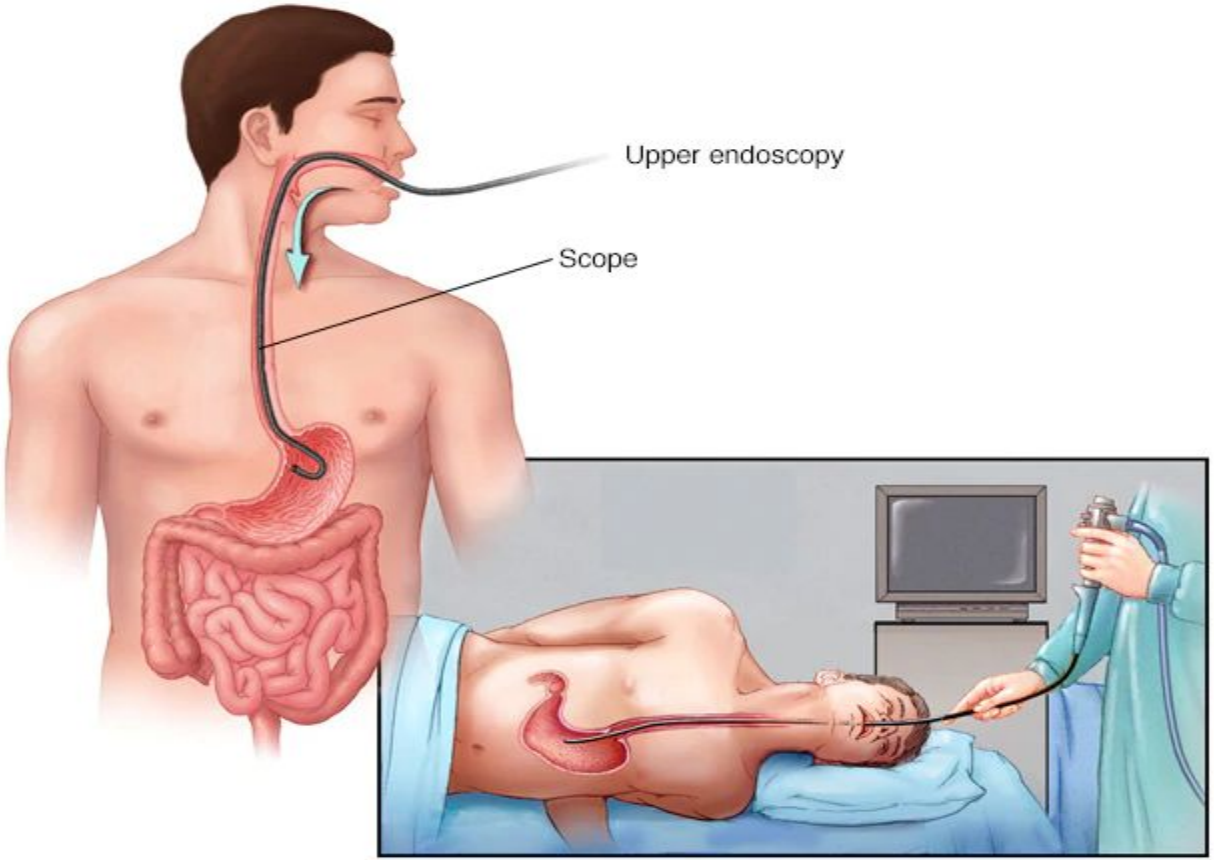
GENETIC DIAGNOSTIC

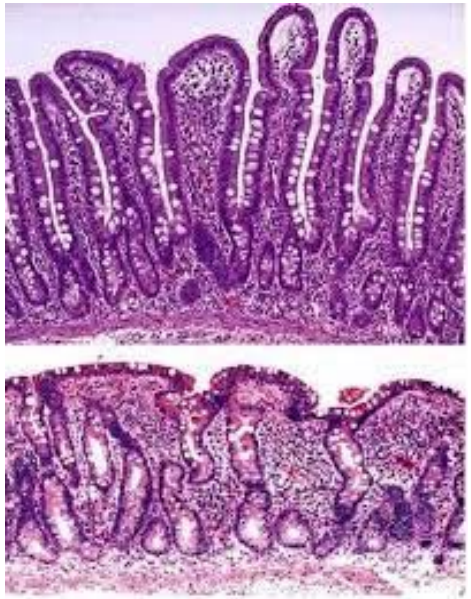
The following results were determined:
1) Alleles from DQB1 * 02:01 (DQ2) and / or DQB1 * 03: 02 (DQ8) were proven
2) Alleles from DQA1 * 05: 01, 05, 08 (without serological DQ2 / 8 Correspondence has been proven

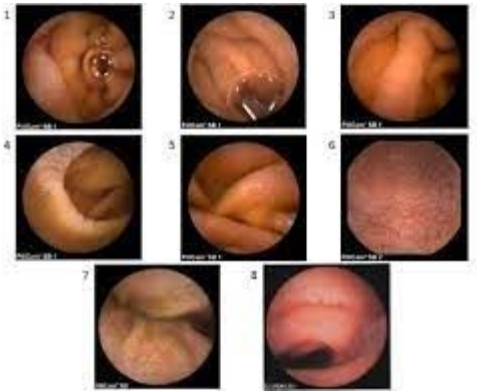
Interpretation:

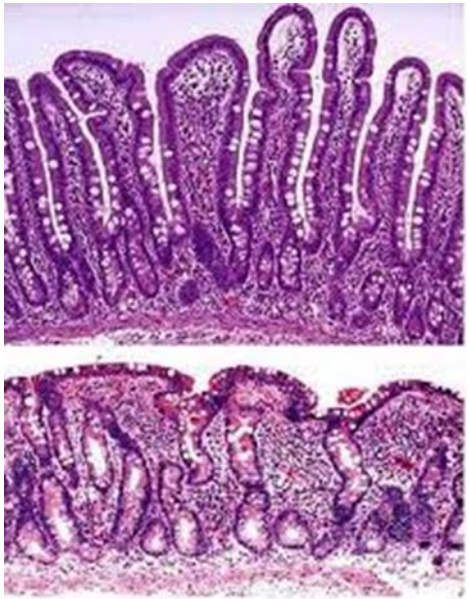
The result can lead to suspicion of celiac disease
do not exclude.
Selected HLA alleles of the DQ2 and DQ8 ocus and other associated DQB1 / A1 alleles. the exclusion of DQ2 and DQ8 has a high negative
Predictive forecast value.

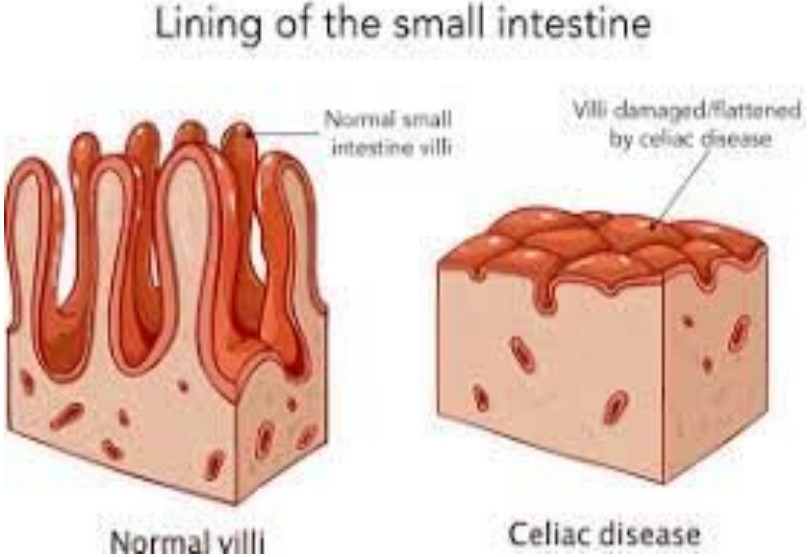
Genetic diagnostic can only exclude celiac disease.










Lining of the small intestine
Normal small intestine villi
Villi damaged/flattened by celiac disease
Normal villi
Celiac disease

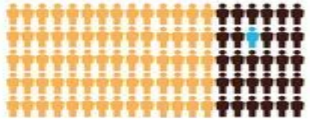
Celiac Disease

Celiac disease is an intolerance to gluten, a natural substance found in flour and in foods made with rye, barley, or wheat.

The only known treatment for Celiac disease is eating a gluten-free diet. This allows the lining of the bowel to heal and reduces the symptoms of Celiac disease.

RISK INFORMATION

Approximately 1 in 100 people from North and South America, Europe, North Africa, and India have Celiac disease.



1 in 100

1 out of these 30 individuals will actually have symptoms of Celiac disease. Therefore, testing positive for these genetic variants does not mean an individual has or will develop Celiac disease. Rather, it means they are more likely to develop Celiac disease than people who do not have these variants.

1 in 30

HOW IS CELIAC INHERITED?

- Individuals with no family history of Celiac disease have a one in 100 risk to develop Celiac disease.
- People with a least one close family member with a Celiac disease diagnosis have a 5-20% chance of developing Celiac disease themselves.
- An individual's risk may be as high as 40% if they share the same genetic variants as their affected family member.

NO FAMILY HISTORY

ONE OR MORE FAMILY MEMBERS WITH CELIAC DISEASE

ONE OR MORE FAMILY MEMBERS WITH CELIAC DISEASE AND A POSITIVE GENETIC TEST

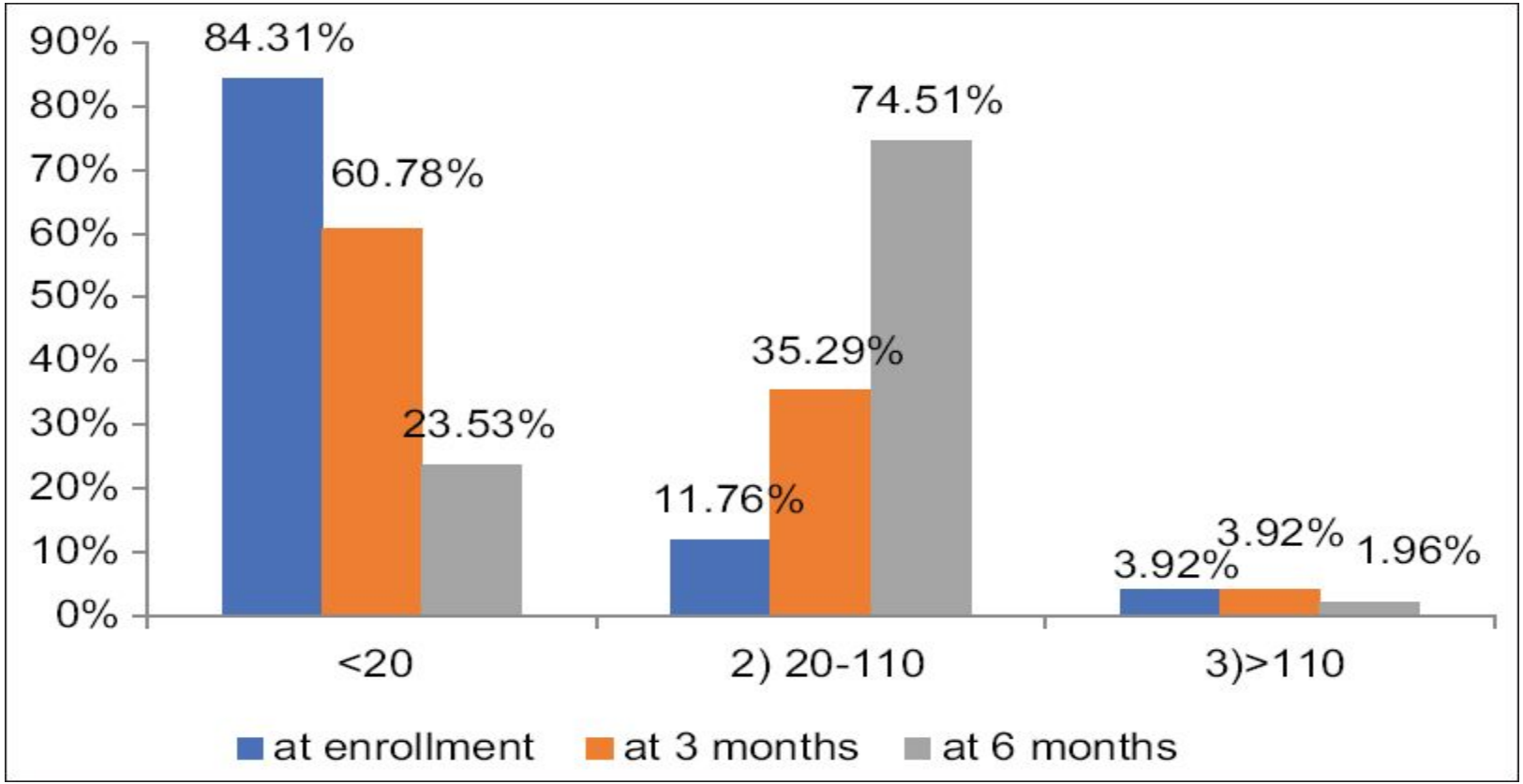
SEQ2KNOW

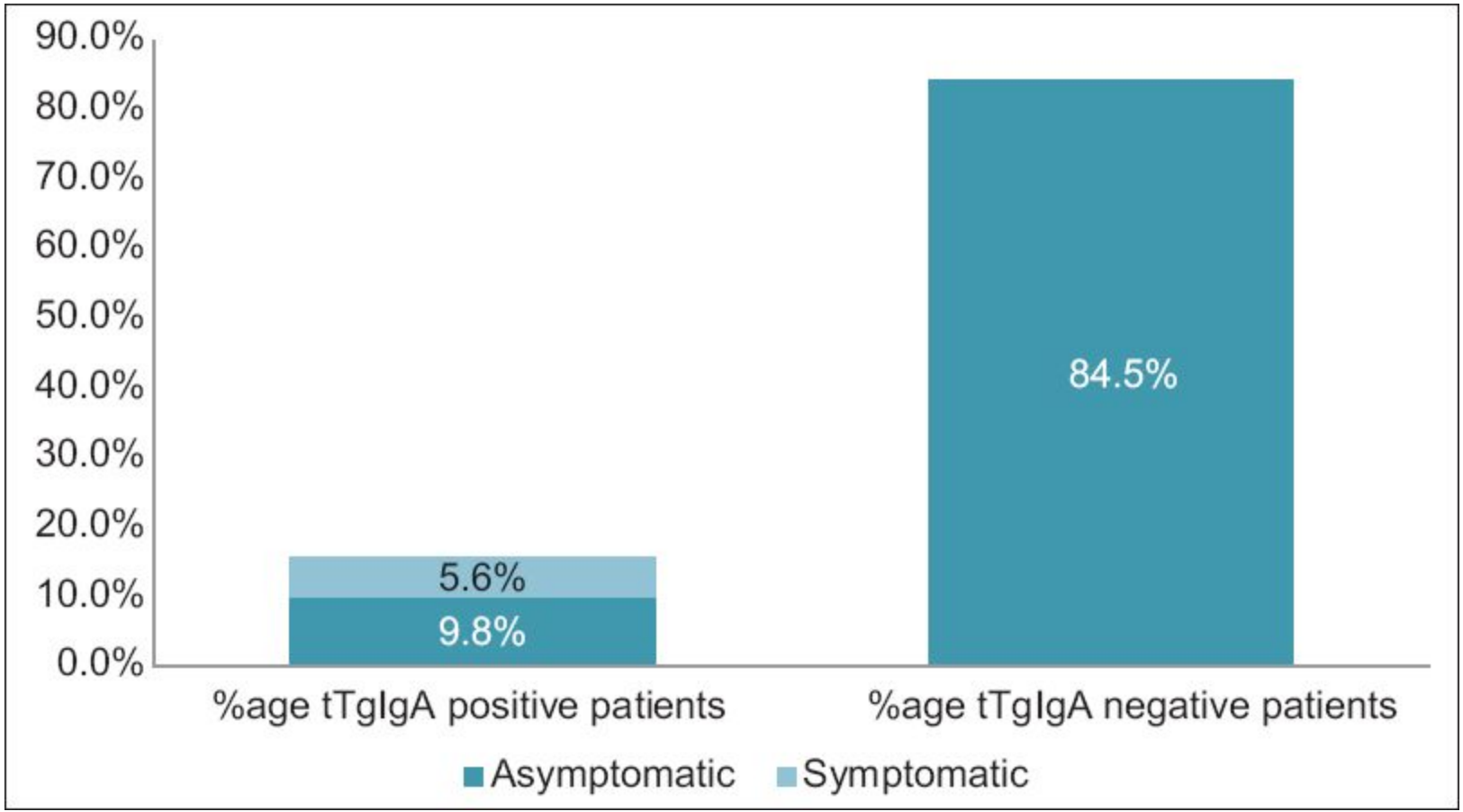
Genetic testing on your terms

Seeking answers through genetic sequencing.

CELIAC DISEASE IN INDIA

INDIAN CHILDREN WITH CELIAC DISEASE –



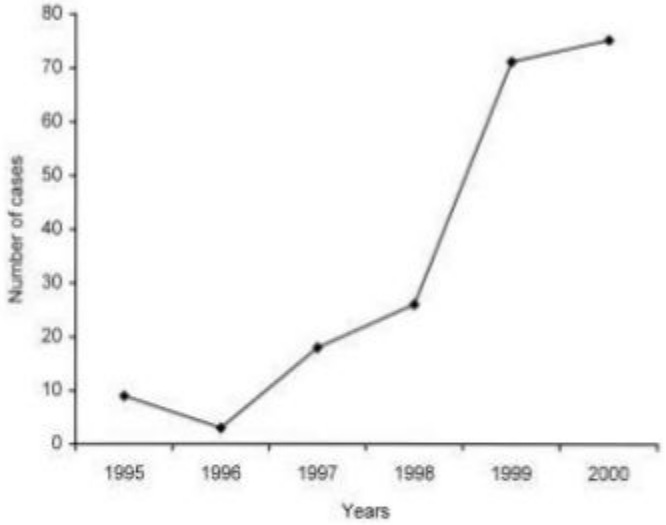

90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
5.6%
9.8%
84.5%
%age tTgIgA positive patients
%age tTgIgA negative patients
Asymptomatic
Symptomatic

Increasing Incidence in India

- Increasingly reported from the wheat-eating population of North India

- Population studies from parts of India (using serology and biopsy) indicate that the prevalence may be between 0.33 and 1.06% in children and 0.18–1.2% in adults (Gut 2006;55:1037-1046)

- Strong association with DQ2 heterodimer and with DR3 Asian haplotypes (A26-B8-DR3)



The 3-fold rise in incidence of cases of Celiac Disease from 1995 to 2000

The American Journal of Gastroenterology (2001) 96, 2804–2805


be food
Thank you
smart