

LACTOSE INTOLERANCE PREVALENCE IN NORTH MACEDONIA

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Introduction

Common cause of human gastrointestinal disorders is abnormal digestion of milk sugar lactose. Lactose intolerance occurs when the gastro intestinal system is not able to digest the sugar lactose. Primary hypolactasia is one of the main causes of lactose intolerance fig.1.
Genetic tests are used in primary lactose intolerance. This condition is associated with two polymorphisms: 13910 C>T and 22018 G>A located in Lactase Phlorizin Hydrolase gene (LPH). Gene is located in locus 2q21. The polymorphism is detected by testing of DNA (isolate from white blood cells), extracted from blood or saliva samples.

Method

We analyzed the results from one hundred and sixty patients with abdominal symptoms, who had been tested for the most common mutation 13910 T>C in the promoter of the LPH gene. The test was performed using Realtime PCR (FLASH technique).

Results

The results showed that prevalence of the CC (LCT-13910C/T) genotype associated with hypolactasia was very high among Macedonian population, respectively.

Discussion

Lactose intolerance is most prevalent in people of East Asian descent. In European population this condition differs between Northern countries with tolerance level above 70% and the others European parts mostly in South Europe where N. Macedonia geographically belongs, as well as Turkey, Greece, and Italy where higher percent of people are affected fig.2. Lactose-free diet is almost every time recommended in people with lactose intolerance, to reduce symptom manifestations. According to recent data, LI subjects consume lower amounts of calcium, phosphorus, choline, riboflavin, vitamin B12 and vitamin A. This indicates that our country as well as global dairy industry has to develop more lactose-free products to reduce micronutrient deficiencies.

Conclusion

The results demonstrates that genetic laboratory test of LPH 13910 C>T along with other important diagnostic criteria can be considered as a simple and efficacious diagnostic criteria in differentiating patients with primary hypolactasia from those with secondary hypolactasia, which are dominant in Macedonian population.

References

Facioni MS, Raspini B, Pivari F, Dogliotti E, Cena H. Nutritional management of lactose intolerance: the importance of diet and food labelling. J Transl Med. 2020 Jun 26;18(1):260. doi: 10.1186/s12967-020-02429-2. PMID: 32590986; PMCID: PMC7318541.
Bulhões AC, Goldani HA, Oliveira FS, Matte US, Mazzuca RB, Silveira TR. Correlation between lactose absorption and the C/T-13910 and G/A-22018 mutations of the lactase-phlorizin hydrolase (LCT) gene in adult-type hypolactasia.

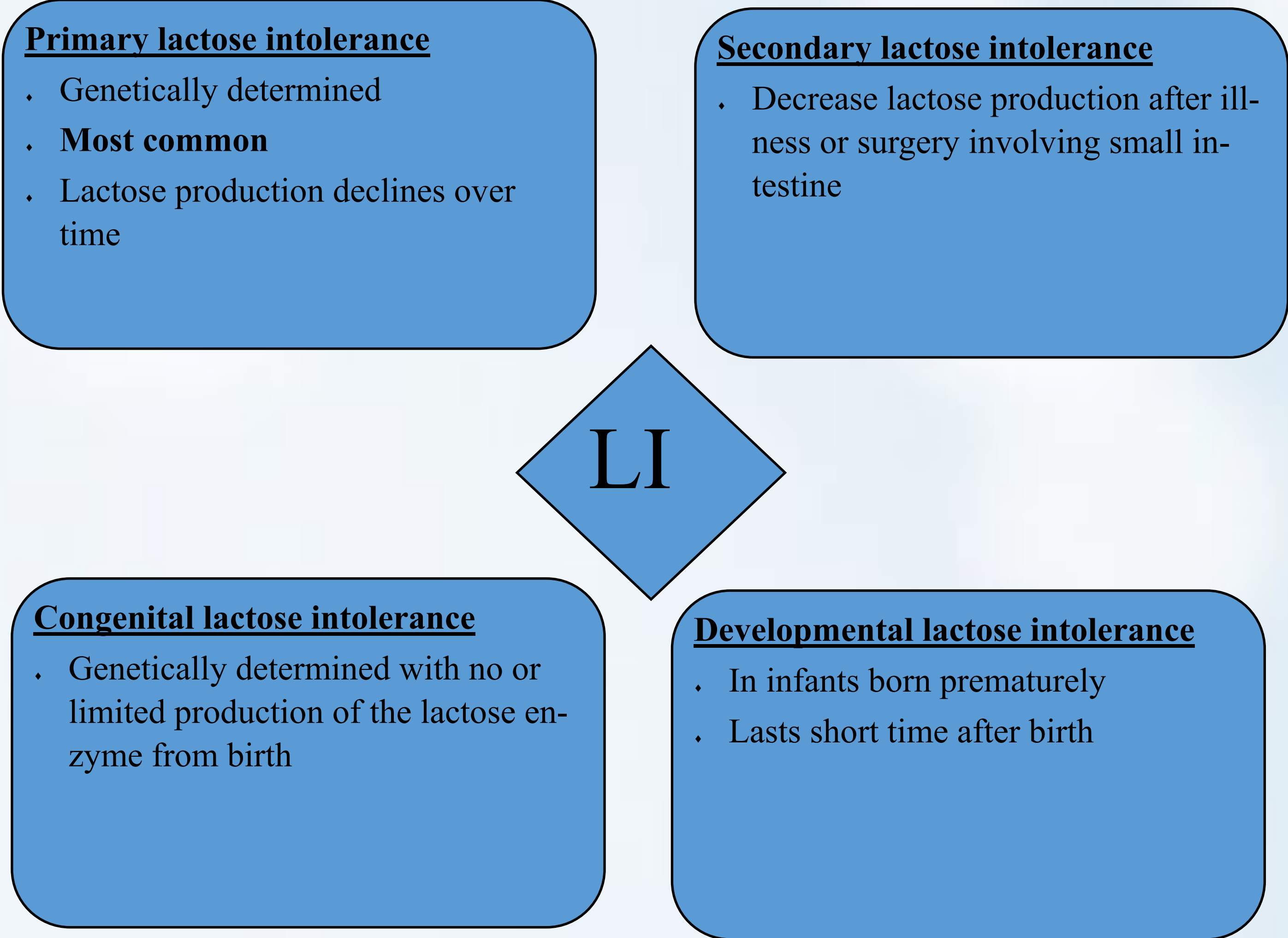


Figure 1. Types of lactose intolerance

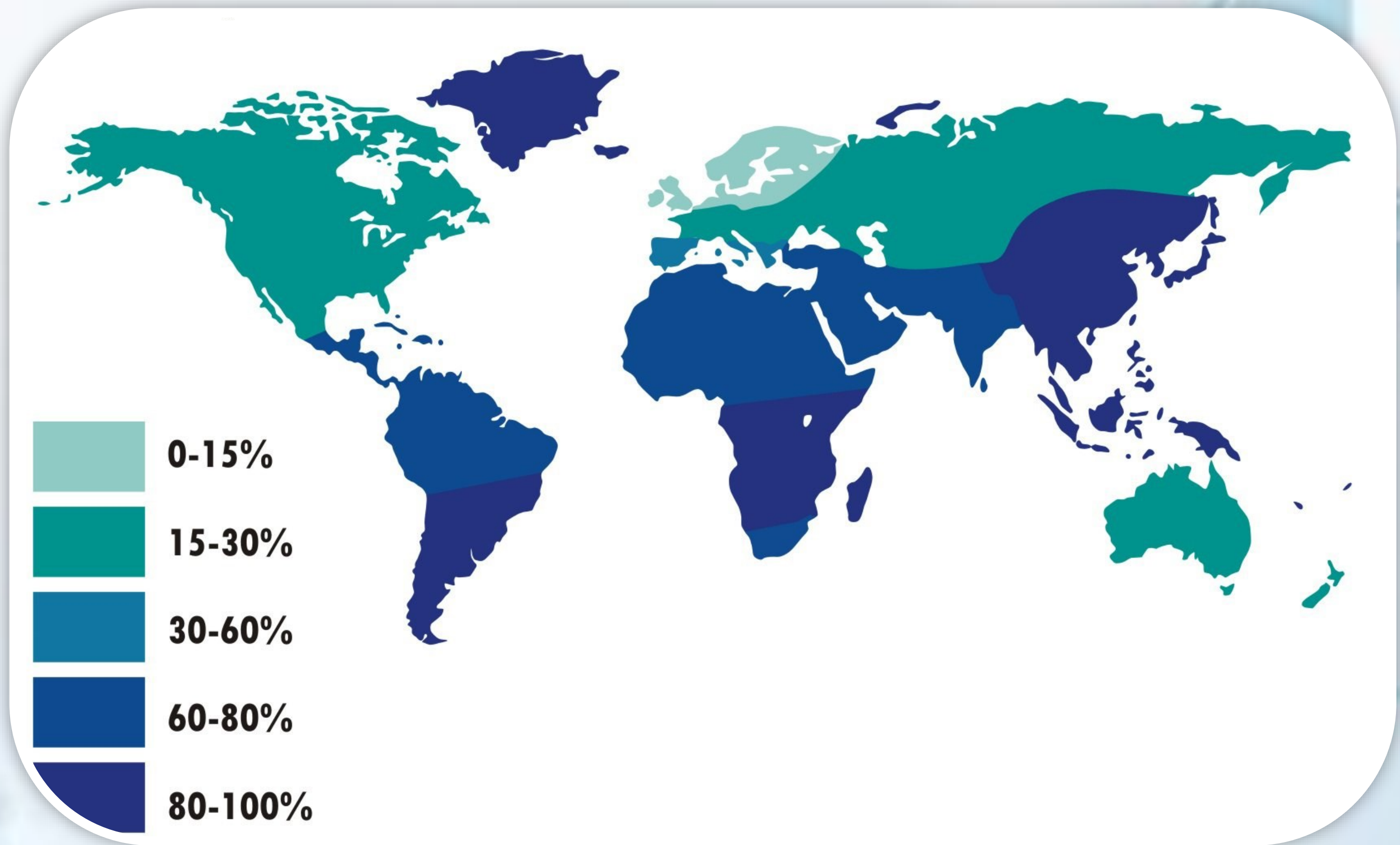


Figure 2. Worldwide prevalence of lactose intolerance