Fructose Malabsorption

Breath Test Interpretation Guidelines

There are two common causes of fructose malabsorption. First is a genetic error of hepatic enzyme aldolase B synthesis. Second is incomplete fructose absorption. In this case, the capacity of the gut to transport fructose across the intestinal epithelium is exceeded. The inability to keep up with fructose transport may be caused by disease/disorders, such as Celiac disease, that damage the intestines.[1, 2]

Fructose absorption capacity varies widely within the population. Up to 50% of the U.S. population is unable to absorb 25 g of pure fructose. In clinical trials, researchers found that up to 80% of healthy controls were unable to absorb a 50 g fructose load.[1, 2]

Symptoms of Fructose Malabsorption

- Abdominal pain
- Bloating
- Flatulence
- Diarrhea (commonly mistaken for irritable bowel syndrome)
- Small intestinal bacterial overgrowth (SIBO)
- Fungal overgrowth

Many people with fructose malabsorption can only tolerate up to 25 g of fructose and may need to improve health with additional nutritional counseling and/or digestive support.[1, 2]

Neurovanna Fructose Diagnostic Criteria

Numerous published studies, consensus papers and laboratory validations are used by clinicians to interpret breath test results. Laboratory diagnosis and commentary are provided to the practitioner for educational purposes and should not be considered as diagnostic.

- Methane production ≥10 parts per million (ppm) during the test[3]
- A rise over lowest preceding value in hydrogen production ≥20 ppm during the test[3,4]
- A rise over lowest preceding value in the sum of hydrogen and methane production ≥15 ppm during the test[4]

Clinical Considerations

Falsely elevated findings may result from:

- Improper test preparation
- Residual fiber in the intestine due to delayed transit time
- Residual oropharyngeal (mouth and throat) bacteria
- Exposure to tobacco smoke during collection
- Chewing gum during collection
- Sleeping during collection

Elevated baseline hydrogen levels after strictly following preparation guidelines can occur and may interfere with test interpretations. Based on a complete clinical picture, some healthcare practitioners may consider an elevated hydrogen baseline a positive test.

Quality Control

Neurovanna's quality control exceeds laboratory equipment manufacturer's recommendations with machinery calibrated after every 2 hours or 5th test run. Testing performed on a CLIA waived, QuinTron BreathTracker™ Digital MicroLyzer H+. A parallel measurement of carbon dioxide (CO_2) is obtained with each sample to allow for greater testing precision. All samples are processed using CO_2 correction factor technique that reduces errors and improves interpretation.

1. Latulippe ME and Skoog SM. *Crit Rev Food Sci Nutr*. 2011;51(7):583–592.
2. Berni Canani R, et al. *Nutrients*. 2016;8(3):157. Published 2016 Mar 10.
3. Rezaie A, et al. The American journal of gastroenterology. May 2017;112(5):775-784.
4. QuinTron validated criteria.

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