

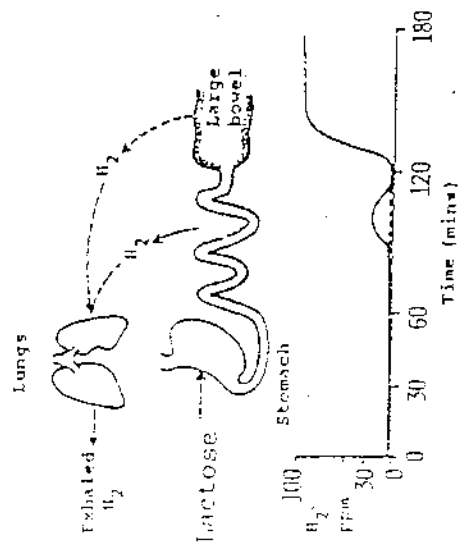
You Might Consider

The Hydrogen Breath Test for evaluation of carbohydrate absorption and for gastrointestinal diagnosis

The breath analysis test based on a measurement of hydrogen (H_2) gas in expired air has moved to the forefront as a clinical tool. Its simple concept and application, combined with non-invasive collection techniques, improved instrumentation, and versatility, have projected the H_2 breath test to a position of prominence in the field of gastrointestinal diagnosis.

The principle of the test is based upon the fact that under appropriate conditions of pH and status, certain species of the normal anaerobic flora of the human intestinal tract, usually located in the proximal large bowel, can ferment carbohydrate with the evolution of hydrogen. Under ordinary circumstances, orally ingested carbohydrates are quantitatively removed from the intestinal lumen of the small intestine. The

the appropriate bacterial species for H_2 production in their colons, and the mass of these bacteria determine the H_2 response to a given dose of non-absorbed carbohydrates.



The Hydrogen Breath Test

Clinical Applications: Assessing Carbohydrate Absorption and Gastrointestinal Diagnosis

Carbohydrate Absorption Test

HYDROGEN *from previous page*

The typical curve and scheme of the test is seen diagrammatically in the figure on page three. Increases in H_2 greater than 20 parts per million above the baseline at any sampling period is diagnostic of lactose malabsorption. Clinical uses of the Hydrogen Breath Test are shown in Tables 1 and 2.

Table 1
Clinical Applications of Hydrogen
Breath Analysis in Assessing
Carbohydrate Absorption

Lactose malabsorption
 Sucrose malabsorption
 Glucose malabsorption
 D(-)xylose absorption
 Intolerances of mucopolysaccharides in the colon
 Absorption of "lean" or "high" protein intestinal complaints
 Evaluation of intestinal adaption after gut resection

The transit time of a meal or a solution from mouth to colon can be determined by observing the interval between the ingestion of a nonabsorbable carbohydrate such as lactulose and a detectable rise in breath H_2 excretion, which signifies the initiation of colonic fermentation.

Table 3
Limitations and Caveats in
Application and Interpretation of
Hydrogen Breath-Analysis Test

Idiopathic absence of appropriate bacterial flora
 Prior use of oral antibiotics
 Prior use of high-colonic enemas
 Chronically acid colonic pH due to continuous fermentation
 Active diarrheal disease
 Elevated basal H_2 concentrations in the fasting state
 Delayed gastric emptying
 Cigarette smoking
 Sleeping during the test
 Administration of the test carbohydrate with a dietary fiber-containing meal
 Administration of the test with a glycoprotein-rich meal
 Storage of samples in contaminated evacuated glass tubes

Table 2
Clinical Applications of
Hydrogen Breath Analysis in
Gastrointestinal Diagnosis

Bacterial overgrowth of the small intestine
 Gastrointestinal transit time (mouth-to-colon)
 Malabsorption of nutrients

This assay is done on the Pacific Campus and should be scheduled. Specimen collection need not be done on site, however, as collection bags