

History of Breath-Testing

Breath trace-gases were first used as an indicator that complex sugars (disaccharides) were not broken down (hydrolyzed) and absorbed in the small intestine during the digestion of foods. Hydrogen (H_2) was measured in the breath after administering a dose of the sugar to be studied. The widest application of the test was for **lactose malabsorption** or **lactose intolerance**, which is related to milk intolerance in a majority of adults world-wide. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the NIH (USA) estimates that between 30 and 50 million Americans are lactose intolerant. The hydrogen breath-test (often referred to as the HBT) replaced a blood-test which was based on the absence of a blood glucose response following lactose ingestion. The test is not as reliable as the breath hydrogen test since it produces a greater proportion of false negative and false positive tests.

The incidence of lactose malabsorption throughout the world is surprising to most people. Adults who cannot digest milk sugar make up the majority of the world's population. Those who can drink milk without getting sick are likely to be North Americans, Australians or Northern Europeans. The ability to digest milk beyond the age of 3-5 years is genetically determined, and is a dominant trait.

When the reliability and simplicity of the breath- H_2 test was demonstrated with lactose, it was soon applied to other complex sugars like fructose (from fruits), maltose (from some starches), and sucrose (common table sugar, which is rarely absorbed). It has also been used to indicate that some people are unusually sensitive to sorbitol, an artificial sweetener used in dietetic candy, sugar-free chewing gum, and other dietetic foods.

Recent studies have shown that methane has been added as a useful trace-gas for the study of digestive problems. Methane (CH_4) is an important intestinal gas and it should also be measured in studies of carbohydrate malabsorption in order to provide the most information to the physician. Clinicians who are leaders in their medical community are beginning to work with methane and will continue to be well ahead of the field as CH_4 become more widely understood. QuinTron manufactures breath-testing instrumentation for trace-gas analysis that encompasses both H_2 and CH_4 in a single instrument for clinicians that wish to take advantage of the opportunity that CH_4 provides to the patient studies.

References available for history of breath-testing can be found in the Breath-Tests and Gastroenterology, 1998 edition written by Dr. Lyle Hamilton, Ph.D. or from QuinTron directly if requested.

