Breath-Tests and Digestive Problems

When some bacteria digest (or ferment) food substances, they produce acids, water and gases.The major gases which are produced by bacteria include, primarily, carbon dioxide (CO_2), hydrogen (H_2), methane (CH_4) and small concentrations of aromatic gases. Carbon dioxide is produced by all cells during metabolism, but only bacteria can produce H_2 and CH_4 as metabolic by products, and this is accomplished primarily by bacteria which thrive in the absence of oxygen (called anaerobic bacteria). So, if either H_2 or CH_4 are produced biologically, it tells us that some food substance is exposed to bacterial fermentation. In the digestive tract, bacteria are normally limited to the colon. Most of the bacteria contained in food are killed by the acidity of the stomach, so the small intestine usually has few bacteria. In some conditions, called "bacterial overgrowth", bacteria exist in high concentrations in the small intestine. Their presence in that area can interfere with the absorption of some vitamins and other essential foodstuffs, so it is important to diagnose the condition. The colon is concerned with conserving water and salt by reabsorbing them from the lumenal contents. However, the colon is involved in other functions, some of which depend on having a high bacterial-count. Fiber, very popular in breakfast cereals, is not digested in the small intestine, so it undergoes bacterial fermentation in the colon. Short-chain fatty acids (SCFA) produced by that process are absorbed in the colon, and are beneficial to health. It is becoming apparent that substantial amounts of starch (10-20% of foods like legumes) escape digestion in the small intestine and are broken down in the colon, thus, adding to the efficiency of energy production by such food-stuffs. In addition, colonic bacteria contribute to fecal bulk, and the short-chain fatty acids mentioned above reduce colonic pH. These factors may reduce the likelihood of diarrhea, confer some degree of protection against other severe colon problems, and enhance the colonic absorption of metal ions like calcium, magnesium and zinc. Thus, fermentation in the colon is normal, and it is important. Gases which are produced in the colon and small intestine are reabsorbed and equilibrated with the blood leaving that area. They appear in the lung and cross the capillary membrane into the alveoli, from which they are expired during breathing. The alveolar air can be collected with QuinTron collection devices and analyzed on BreathTracker or MicroLyzer instrument.

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EasySampler™ Device - US Patent # 5,467,776
QTL0122 Rev B

QUINTRON

Small Intestinal Bacterial Overgrowth Breath Test

BEFORE YOU START THE TEST

Please read all directions and familiarize yourself with the test procedures. The test results will be useful only if the samples are properly collected.

Do not insert your finger into the tube holder of the EasySampler at any time; it contains a sharp needle. There is a rubber sheath over the needle, this is intentional, do not remove it.

Do not loosen or remove the tops of the collection vials; this will destroy the vacuum and make the tubes useless for this test.

KIT CONTENTS

- EasySamplerTM with tube holder
- 10 - Vacuum-sealed collection tubes
- Labels for the collection tubes
- Lactulose (10 ml)

TIME NEEDED FOR TESTING

- This test will take 3 hours to complete.
- After collecting a baseline sample (#1) and drinking the lactulose (10 ml), each breath sample will be collected in 15 min and two last samples - after 30 min intervals throughout the test period.
- Please schedule your time appropriately.

Write your name and the number of samples taken on the labels
#1 - take the first sample before drinking lactulose.
Then drink lactulose (10 ml) and measure the first 30 minutes.
After that, follow the next instructions.

Sample	Collection Time
#1	before drinking lactulose
#2	30 min after drink
#3	45 min after drink
#4	60 min after drink
#5	75 min after drink
#6	90 min after drink
#7	105 min after drink
#8	120 min after drink
#9	150 min after drink
#10	180 min after drink

PERFORMING THE TEST - Collection Steps

1

- Hold the EasySampler device in one hand and a collection tube in the other hand.
- You will only exhale once per each sample collection.
- Take a normal (not deep) breath in; close your mouth around the mouthpiece then blow out normally.

2

- Exhale once per each sample collection. As you exhale, the bag fills with air. Keep it inflated. (There is a small hole in the bag, this in intentional).
- During your exhalation, insert the test tube into the needle holder completely so the stopper on the tube is punctured.

3

Remove the test tube after 1-2 seconds. Keep the bag inflated until after the test tube is removed from the test tube holder.

4

Complete the tube label provided. Make certain you label the Sample # correctly or your results will be inconclusive.

5

Put collection test tubes in the bubble bag(s). Place the bubble bag(s), any paperwork, and the EasySampler back in the cardboard container, and return to the laboratory for analysis immediately.

6

Return the kit immediately for analysis. Your breath sample is only stable for 5 days after collection.