

JOINT EVENT

12<sup>th</sup> Global Gastroenterologists Meeting  
&

3<sup>rd</sup> International Conference on Metabolic and Bariatric Surgery

March 15-16, 2018 Barcelona, Spain

**Hydrogen breath test for diagnosis of IBS and small intestinal bacterial overgrowth**

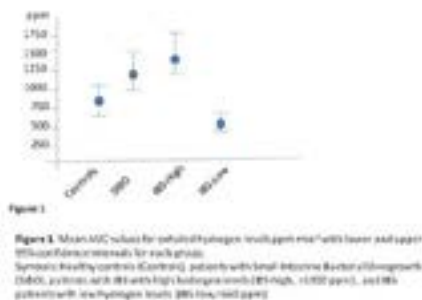
Atti La Dahlgren and Per M Hellström  
Uppsala University, Sweden

**Background:** This study was carried out to establish firm diagnostic criteria of the lactulose hydrogen breath test (LHBT) in IBS patients, clinically used for diagnosing small intestinal bacterial overgrowth (SIBO).

**Methodology:** LHBT was carried out in 47 healthy subjects, 35 patients with SIBO, and 87 patients with IBS (Rome II criteria) using 10 grams of lactulose and hydrogen in breath measured over 180 minutes.

**Results:** In healthy controls, the orocecal transit time was 80 min ( $p < 0.01$ ) and used to assess the area under the curve (AUC) between 0-80 min for each subject's exhaled breath hydrogen concentration. The SIBO group was found to have a significantly higher hydrogen AUC than the healthy controls ( $p < 0.05$ ). In IBS patients, one subgroup had higher hydrogen AUC ( $p < 0.01$ ) than controls, whereas another IBS subgroup had low AUC, significantly different from the high hydrogen IBS (cut-off 660 ppm) ( $p < 0.001$ ), and similar to the healthy controls. IBS patients re-tested after antibiotic treatment had a mean AUC value of 306 (98-515) ppm as compared to 1259 (790-1729) ppm before treatment ( $p < 0.01$ ).

**Conclusion:** LHBT displays limited accuracy but can be used as a first step non-invasive test to indicate signs of SIBO. We suggest LBHT to be conducted for at least 120 min after lactulose administration in order to identify a double peak (small bowel + colon). Hence, the amount of exhaled hydrogen during the first 80 min should be calculated and compared with healthy controls in order to correctly diagnose SIBO. Furthermore, data suggest two groups of IBS patients; one with SIBO, the other with a non-bacterial cause of disease. After treatment of SIBO the high hydrogen IBS group in converted to the low hydrogen IBS type.



**Recent Publication**

1. Riordan S, McIver C, Walker B et al. (1996) The lactulose breath hydrogen test and small intestinal bacterial overgrowth. *Am. J Gastroenterol.* 91(9):1795-1803.
2. Pimentel M, Chow E J, Lin H C (2000) Eradication of small intestinal bacterial overgrowth reduces symptoms of irritable bowel syndrome. *Am. J Gastroenterol.* 95(12):3503-3506.
3. Pimentel M, Chow E J, Lin H C (2003) Normalization of lactulose breath testing correlates with symptom improvement in irritable bowel syndrome. a double blind, randomized, placebo-controlled study. *Am. J Gastroenterol.* 98(2):412-419.
4. Bond J H, Levitt M D, Prentiss R (1975) Investigation of small bowel transit time in man utilizing pulmonary hydrogen (H<sub>2</sub>) measurement. *J Lab. Clin. Med.* 85(4):546-555.

**Biography**

Atti La Dahlgren, MD, MPH is a Public-Health physician and a PhD student in the Department of Medical Sciences, Uppsala University, Uppsala, Sweden. The theme for his doctoral work relates to Irritable Bowel Syndrome (IBS) and the role of the gut microbiota in this condition.

atti-la.dahlgren@medsci.uu.se