

Diet in Irritable Bowel Syndrome

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Disclosure

- ❑ I have the following financial relationships to disclose:
 - ❑ Gerson-Lehrman (consultant)
 - ❑ Mead-Johnson (consultant)
- ❑ No products or services produced by these companies are relevant to my presentation

Objectives

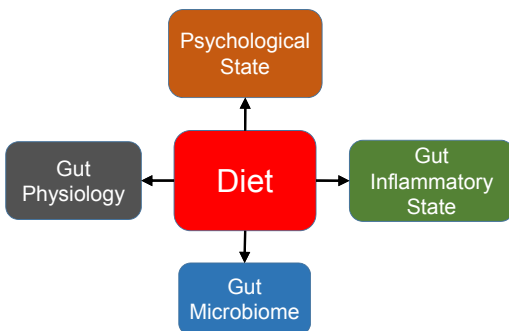
- ❑ Describe how specific dietary components can exacerbate symptoms in IBS
- ❑ Apply different dietary management strategies to children with IBS

FGIDs and Dietary Complaints

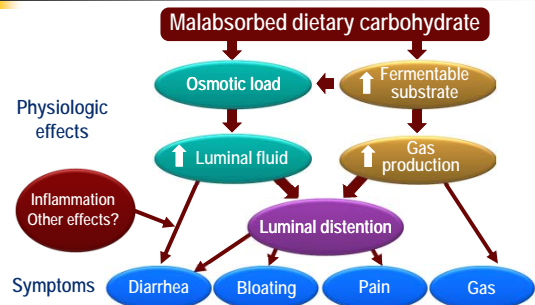
- ❑ Focus groups in children (n=25)
- ❑ Median number of foods identified = 11
 - ❑ Spicy
 - ❑ Cow's milk
 - ❑ Pizza
- ❑ Parental assessment of quality of life inversely correlated with number of foods

(Carlson M.J. J Acad Nutr Diet 2014;114:403)

Diet in IBS



Pathogenesis of Symptoms



(Barrett JS. Pract Gastroenterol 2007;31:51)

Dietary Carbohydrates

Sugars (1-2)

Monosaccharides

Glucose
Galactose
Fructose

Disaccharides

Lactose
Sucrose
Maltose
Trehalose

Polyols

Sorbitol
Mannitol
Xylitol

Oligosaccharides (3-9)

Malto-oligosaccharides

Maltodextrin

Non- α -glucan

Oligosaccharides
Raffinose
Stachyose
Fructooligosaccharides
Inulin

Polysaccharides (≥ 10)

Starch

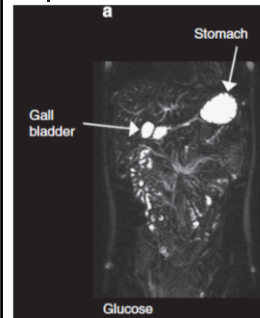
Amylose
Amylopectin

Non-starch polysaccharides

Pectin (100%)
Gums (100%)
Hemicellulose (60-90%)
Cellulose (20-80%)
Psyllium (55%)
Wheat bran (50%)

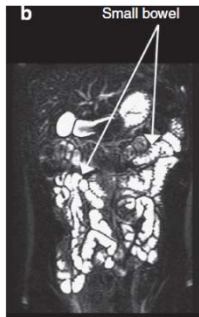
(Cummings JH. Eur J Clin Nutr 2007;61:S5)
(<http://www.fao.org/docrep/w8079e/w8079e01.htm>)

Glucose vs Fructose Absorption



Murray K et al. Am J Gastroenterol 2014;109:110-9

Fructose versus Fructans



(Murray K et al. Am J Gastroenterol 2014;109:110-9)

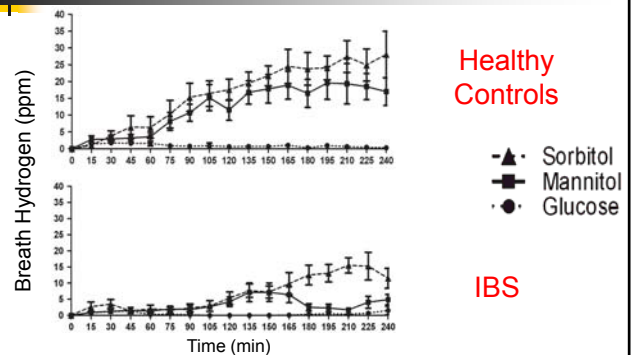
Is Carbohydrate Malabsorption More Common in IBS?

Lactase Genotype – IBS vs Control

- Similar frequency of lactase non-persistence between patients with IBS (n=75) and healthy controls (n=75) in Brazil
- Similar findings in India (IBS, n=150; healthy controls, n=252)

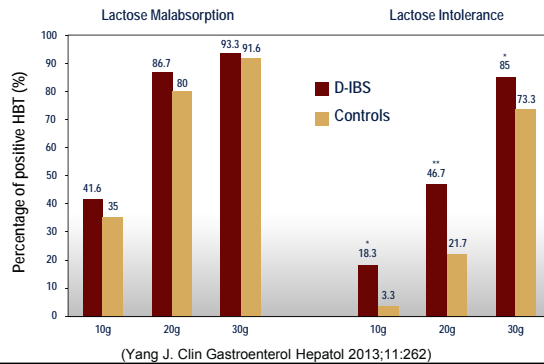
(Bernardes-Silva CFR. Clin Chim Acta 2007;386:7)
(Kumar S. J Gastroenterol Hepatol 2012;27:1825)

Sorbitol and Mannitol Absorption

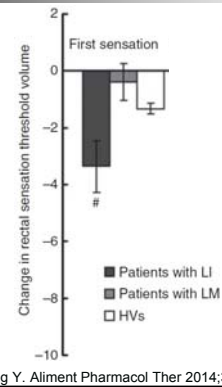


(Yao CK. J Hum Nutr Diet 2014;27:263)

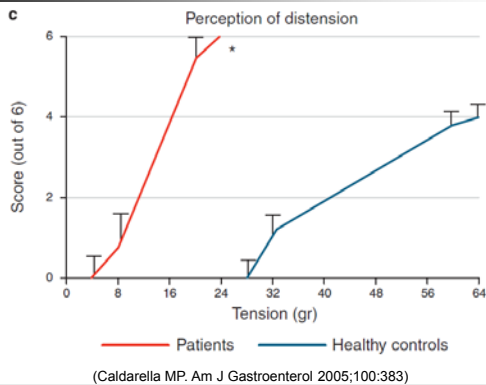
Pathogenesis of Symptoms



Visceral Hypersensitivity and Symptoms



Effect of Duodenal Lipid Infusion



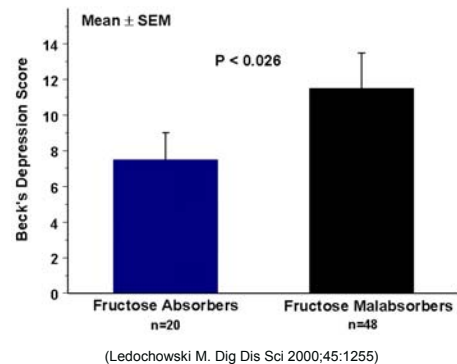
What Else Might GI Symptoms be Related To?

Diet and Psychosocial Distress

- IBS-D (n=55) and healthy controls (n=18) with lactase deficiency
- Greater anxiety in IBS-D patients with lactose intolerance vs those with just malabsorption

(Yang Y. Aliment Pharmacol Ther 2014;39:302)

Diet and Psychosocial Distress



Diet and Psychosocial Distress

- ❑ Randomized, double blind crossover (n=22)
- ❑ 3-day trials with 3-d washout
 - ❑ Gluten (16 g/d)
 - ❑ Whey (16 g/d)
 - ❑ Placebo (no protein)
- ❑ State Trait Personality Inventory
 - ❑ Baseline
 - ❑ Day 3 of each challenge

(Peters SL. Aliment Pharmacol Ther 2014;39:1104)

Diet and Psychosocial Distress



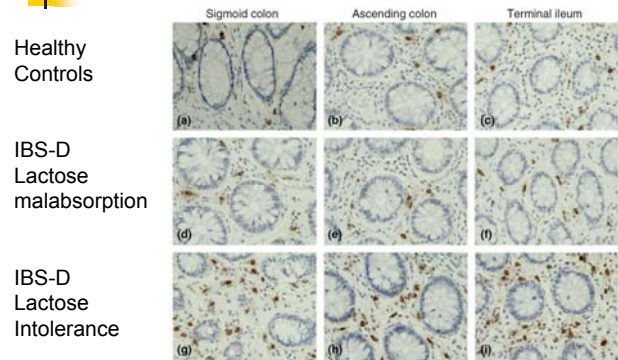
(Peters SL. Aliment Pharmacol Ther 2014;39:1104)

Gut – Brain Axis

- ❑ 4-wk RCT healthy women
 - ❑ No product
 - ❑ Non-fermented dairy product
 - ❑ Probiotic dairy product
- ❑ fMRI scans – Less activity in areas responsible for processing afferent signals from the gut and emotional arousal

(Tillich K. Gastroenterology 2013;144:1394)

Diet and Inflammation



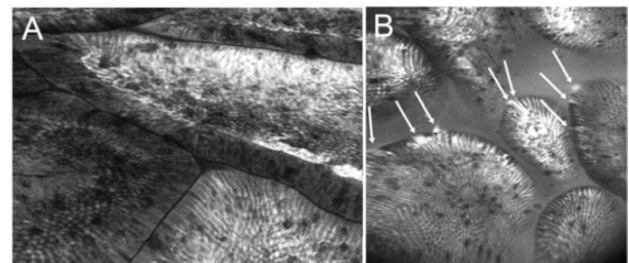
(Yang Y. Aliment Pharmacol Ther 2014;39:302)

Food Induced Mucosal Damage

- ❑ Confocal endomicroscopy in adults with IBS (n=36) and Barrett's (n=10)
- ❑ Applied to mucosa randomly dilute
 - ❑ Cow milk
 - ❑ Wheat
 - ❑ Soy
 - ❑ Yeast

(Fritscher-Ravens A. Gastroenterology 2014; epub)

Food Induced Mucosal Damage



(Fritscher-Ravens A. Gastroenterology 2014; epub)

Dietary Therapy

Low FODMAPs Diet

- ❑ Fermentable
- ❑ Oligosaccharides
- ❑ Fructans/Galactans
- ❑ Disaccharides
- ❑ Monosaccharides
- ❑ And
- ❑ Polyols

(Gibson PR. Am J Gastroenterol 2012;107:657)

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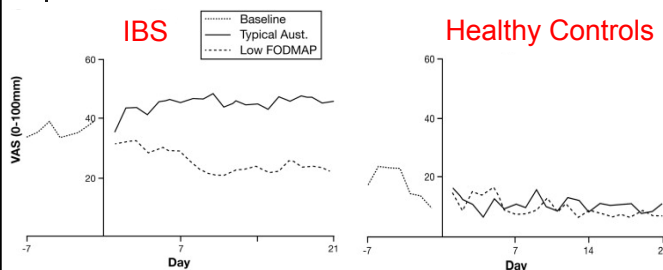
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Low FODMAPs Diet in Adults

- ❑ Double blind, crossover
 - ❑ IBS (n=30)
 - ❑ Healthy controls (n=8)
- ❑ 21 d treatment and washout periods
- ❑ All food provided

(Halmos EP. Gastroenterology 2014;146:67)

Low FODMAPs Trial in Adult IBS

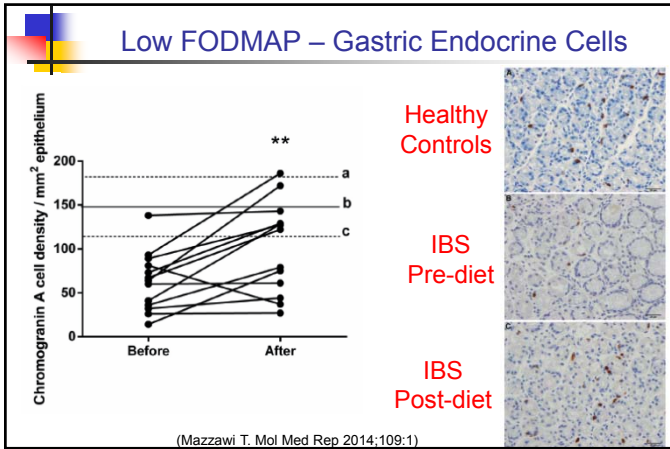
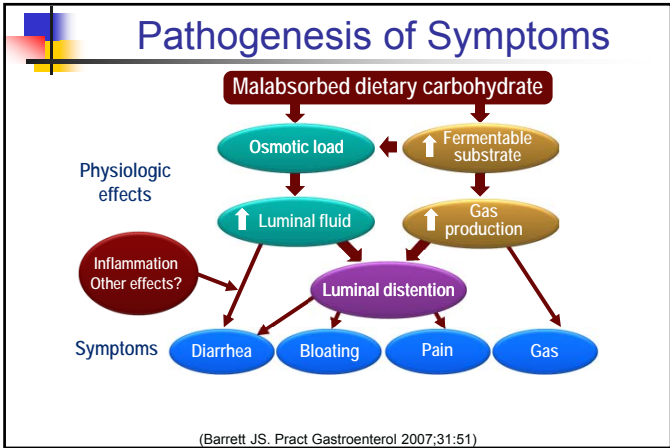
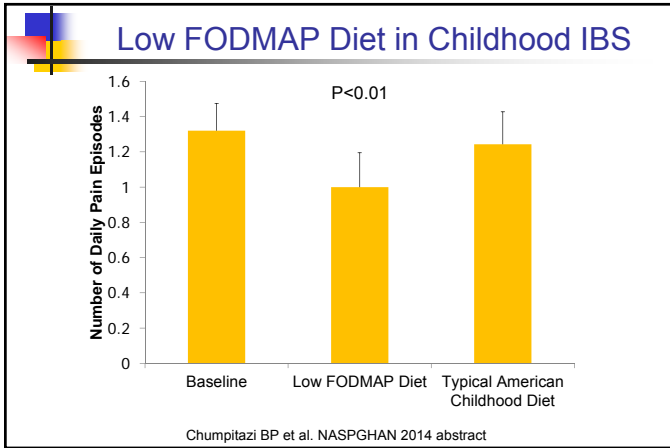


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Low FODMAPs in Childhood IBS

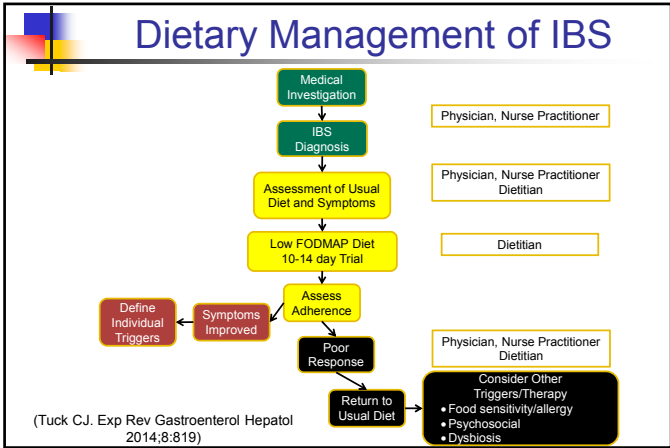
- ❑ Randomized, crossover, double blind
- ❑ Children with IBS (n=33)
- ❑ Two day treatment with one week washout
- ❑ All food provided

Chumpitazi BP et al. NASPGHAN 2014 abstract



- ### Fiber Treatment in IBS
- ❑ Pediatric studies of poor quality
 - ❑ Guar gum/juice vs juice (n=60) for 4 wk
 - ❑ Improvement in abdominal pain
 - ❑ Trend toward improvement in bowel habit (both IBS-D and IBS-C)
 - ❑ Unsettled in adult literature
 - ❑ Some evidence of benefit from psyllium
- (Romano C. World J Gastroenterol 2013;19:235)
 (Huertas-Ceballos AA. Cochrane 2009)
 (Bijkerk CJ. Aliment Pharmacol Ther 2004;19:245)

- ### Probiotics for Childhood IBS
- ❑ Lactobacillus rhamnosus GG
 - ❑ 3 RCT (n=133)
 - ❑ $1 \times 10^9 - 6 \times 10^9$ CFU/d
 - ❑ Effective
 - ❑ VSL#3
 - ❑ Multicenter, crossover trial (n=133)
 - ❑ Appeared effective
- (Horvath A. Aliment Pharmacol Ther 2011;33:1302)



Summary

- ❑ IBS patients are more sensitive to the effects of diet than healthy controls
- ❑ Symptom generation appears related to Gut-Brain axis
 - ❑ Psychosocial distress
 - ❑ Gut inflammatory status
 - ❑ Microbiome composition
- ❑ Low FODMAP diet effective
- ❑ Probiotics possibly effective
- ❑ Role of fiber unclear

Acknowledgements

- ❑ Collaborators
 - ❑ Bruno Chumpitazi, MD
 - ❑ Danita Czyzewski, PhD
 - ❑ Mariella Self, PhD
 - ❑ Jim Versalovic, MD, PhD
 - ❑ Tor Savidge, PhD
 - ❑ Margaret Heitkemper, PhD – University of Washington
- ❑ Funding
 - ❑ R01 NR013497
 - ❑ R21 DK099643



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