

Exclusive Webinar Presentation

Nutritional Approach to Management of Irritable Bowel Syndrome

Earn 1 CPEU

Presented by **Kate Scarlata, RDN, LDN**, and **William Chey, MD, FACP, AGAF, FACP, RFF**, on **Thursday, June 28, 2018**, from 2:00 - 3:00pm ET




FOR A DIGESTIVE PEACE OF MIND

KATE SCARLATA RDN, FODMAP & IBS EXPERT



Disclosures

- **William Chey, MD:** Consultant: Nestle, Campbells; Grants and Research Support: Fody Foods, Nestle, Zespri
- **Kate Scarlata, RDN:** Advisory Board, Consulting & Advertising FODY foods, Casa de Sante, Rachel Paul Foods; Low FODMAP grocery app and books.



OBJECTIVES

- Detail how diet may be a trigger or therapy for IBS, impact changes in gut flora and microbial derived metabolites.
- Describe how FODMAPs impact luminal distention via osmotic and fermentative effects.
- Outline a low FODMAP elimination and re-introduction nutrition protocol.



IBS: Rome IV Criteria

Recurrent abdominal pain at least 1 day per week associated with two or more of the following:

- Related to defecation
- Onset associated with a change in the frequency of stool
- Onset associated with a change in the form of stool

Mearin et al. Gastroenterology, May 2016

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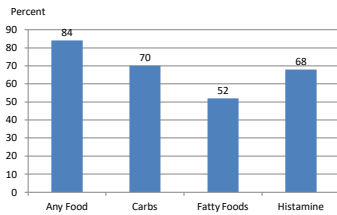


Does Food Cause IBS Symptoms?

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Food and IBS Symptoms



197 IBS pts (Rome III)
Symptom severity correlates with number of food sensitivities
No impact of IBS subgroup

Bohn et al. Am J Gastroenterol 2013;108:634

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Why Do We Care About Food in IBS Patients?

Proportion of UMHS patients (n=247) reporting at least moderate effects on the three IBS-QOL food related questions

| IBS-QOL Question: | Proportion having scale scores ≥ 3 (at least moderate effect)* |
|--|---|
| Q11. I have to watch the amount of food I eat because of my bowel problems | 62.4% (153/245) |
| Q23. I have to watch the kind of food I eat because of my bowel problems | 73.6% (181/246) |
| Q28. I feel frustrated that I cannot eat when I want because of my bowel problems. | 51.2% (126/246) |

Najiov B, et al DOW 2014

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Dietary restrictions are associated with reduced Quality of Life in IBS Patients

| IBS-QOL food questions (total score) | Estimate difference (\pm standard error) | P-value |
|--|---|---------|
| Q11. I have to watch the amount of food I eat because of my bowel problems | -22.27 \pm 2.6 | <0.0001 |
| Q23. I have to watch the kind of food I eat because of my bowel problems | -20.52 \pm 2.9 | <0.0001 |
| Q28. I feel frustrated that I cannot eat when I want because of my bowel problems | -27.47 \pm 2.2 | <0.0001 |

Those with vs. those without diet restriction
Multivariate linear regression model adjusting for age, gender, marital status, alcohol/tobacco use & education level

Najiov et al DOW 14

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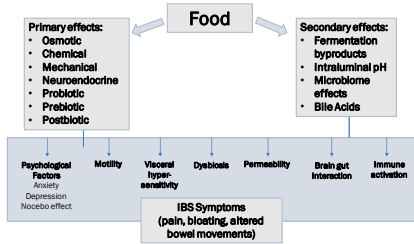


Why Does Food Cause IBS Symptoms?

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Food and GI Symptoms



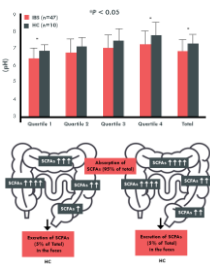
Spencer M. et al. Cur Tr. Oct. 2014

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Colonic Fermentation Is altered in IBS

- 114 IBS pts & 33 HCs
 - pH & transit by Smartpill
 - SCFAs by gas chromatography
- Colonic but not small bowel pH lower in IBS pts v. HCs
- SCFA levels lower in IBS-Cv. IBS-D, M, HCs
- Colonic pH correlated with transit and IBS symptom severity
- SCFA negatively correlated with transit
- Take Home Point: Colonic fermentation may be altered in IBS



Ringel-Kulka et al. Am J Gastroenterol 2015;online early

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Food: Metabolic & Functional Consequences



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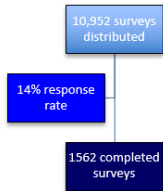


Practice Patterns of Diet Therapies for IBS in the US

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Survey of Diet Therapies for IBS Amongst US Gastroenterologists



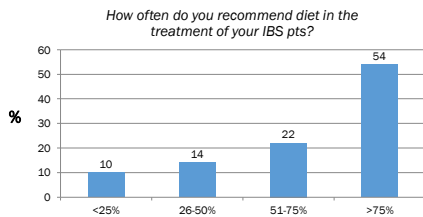
| | |
|----------------------------------|--------|
| Women | 24.1 % |
| Men | 75.9% |
| Academic Practice | 41.9% |
| Board Certified in GI | 84% |
| Over 20 years out of GI Training | 36.7% |

Lenhart, Chey et al. / J Neurogastroenterol Motil 2018

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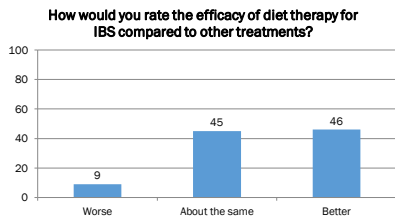
Gastroenterologists Perception of Diet Effectiveness For IBS



Lenhart, Chey et al. / J Neurogastroenterol Motil 2018

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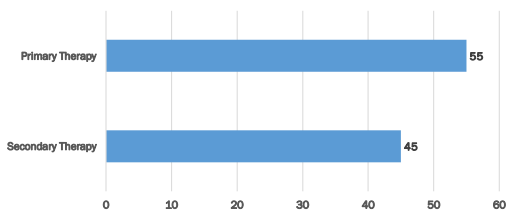
+ Gastroenterologists Perception of Diet Effectiveness For IBS



Lenhart, Chey et al. J Neurogastroenterol Motil 2018

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+ Which Best Describes The Role of Dietary Therapy In The Management of Your Patients With IBS?



Lenhart, Chey et al. J Neurogastroenterol Motil 2018

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+ How Often Will Patients Have Tried the Following Diets Before Being Seen By a Gastroenterologist?

| | Almost Never | Rarely | Sometimes | Usually | Almost Always |
|------------------------|--------------|--------|-----------|---------|---------------|
| Trial and Error | 3.6% | 8.1% | 38.7% | 37.1% | 12.5% |
| Lactose-free | 2.1% | 12.4% | 52.8% | 27.4% | 5.3% |
| Gluten-free | 3.0% | 16.4% | 56.3% | 20.7% | 3.6% |
| Low Fat | 22.2% | 47.9% | 23.6% | 5.4% | 0.9% |
| Low FODMAP | 49.6% | 35.8% | 12.4% | 1.7% | 0.5% |

Lenhart, Chey et al. J Neurogastroenterol Motil 2018

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How Often Do Gastroenterologists Recommend the Following Diets to IBS Patients?

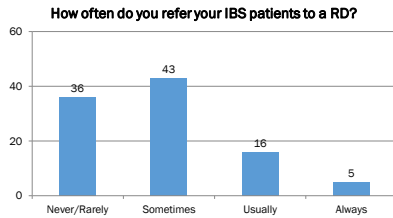
| | Almost Never | Rarely | Sometimes | Usually | Almost Always |
|---------------------|--------------|--------|-----------|---------|---------------|
| High Fiber | 5.5% | 13.2% | 36.2% | 31.0% | 14.1% |
| Lactose-free | 3.1% | 8.4% | 43.9% | 29.3% | 15.3% |
| Gluten-free | 14.9% | 31.5% | 41.5% | 9.3% | 2.8% |
| Low Fat | 17.8% | 30.7% | 33.1% | 13.3% | 5.1% |
| Low FODMAP | 2.8% | 8.7% | 31.1% | 34.4% | 23.0% |

Lenhart, Chey et al. J Neurogastroenterol Motil 2018

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Gastroenterologists, Diet, and IBS



Lenhart, Chey et al. J Neurogastroenterol Motil 2018

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Dietary Interventions For IBS: What Is the Evidence?

- Gluten-free
- Elimination diets
- Low-FODMAP

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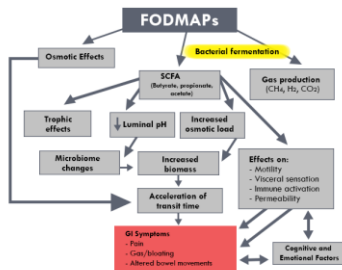
What are FODMAPs?



- Fermentable oligo-, di-, monosaccharides and polyols
- Fruits with fructose exceeding glucose
 - Apples, pears, watermelon
- Fructan containing vegetables
 - Onions, leeks, asparagus, artichokes
- Wheat based products
 - Bread, pasta, cereal, cake, biscuits
- Sorbitol and lactose containing foods
- Raffinose containing foods
 - Legumes, lentils, cabbage, brussels sprouts

Eswaran & Chey, *GI Clin North Am* 2011;40:141
 Shephers et al. *Clin Gastro Hepatol* 2008;6:785
 Gibson & Shepherd, *J Gastro Hepatol* 2010;25:252

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Spencer M, et al. *Curr Tr Opin GI*. 2014;12:424

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RCTs Evaluating the Low-FODMAP Diet For IBS

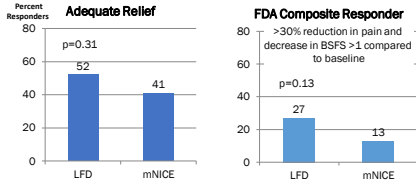
- 7 RCTs compared a low FODMAP diet with various controls in 397 participants
- A low FODMAP diet was associated with reduced overall symptoms compared to controls (RR 0.69; 95% CI 0.54, 0.88, I2 25%)
- The 3 RCTs that compared low FODMAP diet with rigorous control diets had the least heterogeneity between studies but also the least magnitude of effect
- The overall quality of the data was "very low" according to GRADE criteria
 - Most studies were high risk of bias
 - Heterogeneity between study designs
 - Imprecision in the estimate of effect

Donna JC et al. Presented at DDW 2018, Washington, DC June 4, 2018. Abstract 2648.

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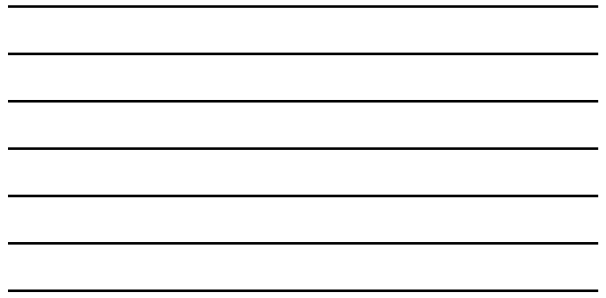
Low FODMAP vs. mNICE Diet for IBS-D: Adequate Relief & FDA Composite Endpoints



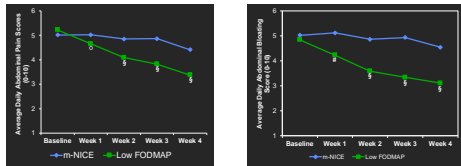
84 patients with IBS-D (45 LFD; median age, 65 women, 43 years [range, 19-68]) randomized to LFD or mNICE x 4 weeks

Eswaran, et al. Am J Gastroenterol 2016;111:1824

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Low-FODMAP vs. mNICE Diet: Weekly Abdominal Pain & Bloating Scores



* = p ≤ .05
= p ≤ .01
§ = p ≤ .001
§§ = p ≤ .0001

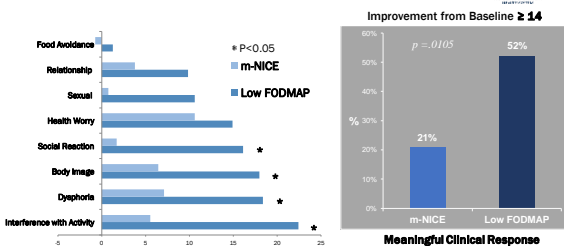
P values refer to the change WITHIN group comparing to baseline score

Eswaran, et al. Am J Gastroenterol 2016;111:1824

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LFD vs. mNICE Diet: IBS-QOL Scores



Eswaran, Choy, DDW 2016

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3 Phases of the Low-FODMAP Diet: **ESP** Elimination Is the Beginning NOT the End!!



Additional Information:
www.myglnutrition.com

Monash University mobile app

Recent Books: Patsy Catsos, Danielle Capalino, Rachel Meltzer (teens), Kate Scarlata

Chey WD. Am J Gastroenterol 2016;111:L366

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<http://www.myglnutrition.com>



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Live patient demonstrations
Case-based learning for clinicians
Practical details on how to run a GI motility lab
Allied Health Professional session
Travel Awards Available, apply by June 15, 2018

Advanced Training for GI Dietitians
CE course
Practicum

FOOD: The Main Course to Digestive Health
Nutrition therapy for GI diseases & disorders

This lecture series is offered by expert faculty and dietitians from the University of Michigan and other institutions and will include lectures and panel discussions on the following topics:

- IBS
- IBD
- EoE
- SIBO
- Gut Microbiome
- Emerging Role of the Gut Microbiome
- GI Issues in Athletes

Save the date!
September 28-30 2018

MISSION
This 3-day innovative and specialized program will provide knowledge and training for RDs and other health professionals with an interest in caring for patients with gastrointestinal diseases.

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

For more info: <http://bit.ly/FOODthemaingcourse2018>

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Role of Dietitian

Initial Screening


- Has patient been diagnosed with IBS or IBS-like symptoms occurring in IBD and/or celiac disease?
- What diet and treatments have been trialed?
- Simple question: Does eating exacerbate your symptoms?
- Is patient appropriate for elimination diet?
 - Eating disorder
 - Malnourished
 - Elderly

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FODMAP ACRONYM:

| | |
|----------|--|
| F | fermentable |
| O | oligosaccharides (fructans and galacto-oligosaccharides-GOS) |
| D | disaccharides (lactose, milk sugar) |
| M | monosaccharide (excess fructose) |
| A | and |
| P | polyols (sugar alcohols such as mannitol and sorbitol) |



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FODMAPs & IBS

- FODMAPs DO NOT cause IBS but reduction of FODMAPs in the diet may reduce symptoms.
- Symptoms are triggered **due to response of the enteric nervous system** to the luminal distention in IBS, likely due to:
 - Nature of gut flora
 - Dysmotility impacting fluid and gas clearance
 - Visceral hypersensitivity
 - Possibly, mast cell degranulation
 - Bacterial metabolites as by-product of fermentation of FODMAPs may play a role

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WHY ARE FODMAPS MALABSORBED?

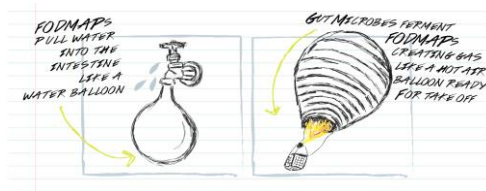
- **Lactose:** Up to 70% of the world population has lactase non persistence, also secondary LI observed in post-infectious IBS & SIBO
- **Fructose:** poor absorption due to it's slow, low-capacity transport mechanism across the epithelium & SIBO; FM occurs in 1in 3 ppl
- **Fructans/ GOS:** humans lack digestive enzymes
- **Polyols:** too large for passive diffusion; absorbed in pores in small intestine.

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FODMAP Effects



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SAMPLE OF HIGH FODMAP SOURCES

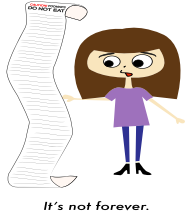
| LACTOSE | EXCESS FRUCTOSE | FRUCTANS | GOS | POLYOLS |
|----------------|--------------------------|----------------------|------------|---------------------|
| MILK | APPLES | DRIED FRUIT | LEGUMES | APPLES |
| CUSTARD | BOYSENBERRY | NECTARINE | PISTACHIOS | APRICOTS |
| ICE CREAM | FIGS | PERSIMMON | CASHEWS | BLACKBERRIES |
| YOGURT | MANGO | WATERMELON | | NECTARINE |
| MILK POWDER | PEARS | ARTICHOKE | | PEACH |
| RICOTTA CHEESE | WATERMELON | GARLIC | | PEARS |
| COTTAGE CHEESE | ASPARAGUS | ONION | | CAULIFLOWER |
| | ARTICHOKE | WHEAT, BARLEY, RYE | | MUSHROOMS |
| | SUGAR SNAP PEAS | CHICORY ROOT EXTRACT | | |
| | HIGH FRUCTOSE CORN SYRUP | INULIN ADDITIVES | | SUGAR ALCOHOL |
| | HONEY | | | ADDITIVES: ISOMALT, |
| | AGAVE | | | MANNITOL, SORBITOL, |
| | | | | MALTITOL |

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LEARNING DIET: NOT LONG TERM!



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3 PHASE "ESP" NUTRITIONAL APPROACH

- 1st phase: **Eliminate** high FODMAP containing foods (2-6 weeks).
- 2nd phase: identify **Sensitivities** of FODMAPs via systematic re-introduction (10-12 weeks).
- 3rd phase: **Personalize** to patient's tolerance

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Up To Date: Low FODMAP Resources



Many free downloadables: katescarlata.com

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FODMAP Effects Are Cumulative



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FODMAP SWAPS

| Food | Choose | LOSE |
|-------------------|---|---|
| Garlic | Garlic infuse oil; Boyajian brand | Garlic flesh, garlic powder or salts |
| Onion | Shallot or onion infused oil or use chives, asafoetida powder or green part of leeks or scallions | Onion, shallot, leek (Fructan in the bulb), onion powder or salts |
| Legumes | 1/2 cup canned: rinsed and drained chickpeas or 1/2 cup canned lentils | Kidney beans or dried beans |
| Wheat flour | King Arthur GF flour blend, Trader's Joes GF flour, Bob's Red mill 1 for 1 cup GF | Wheat flour |
| Soybean | Firm tofu, edamame | Soymilk made w/ whole soybean, silken tofu |
| Milk alternatives | Lactose free milk, hemp, almond, canned coconut milk, rice milk | Cow's milk |
| Cheese | Most hard/aged cheese | Ricotta/Cottage |

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LABEL READING

Highlight of some **High FODMAP** ingredients:

- Agave, honey, HFCS, chicory root, inulin, FOS, fructose, dates, molasses
- Wheat as primary ingredient—traces are okay
- Soy flour or whole soybean, other bean flours
- Apple and pear juice
- Natural flavors-can denote onion/garlic in savory USDA regulated foods (meat products/ broth)

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REINTRODUCTION PHASE

- There is no standardized re-introduction protocol.
- My preference: Cautious reintroduction
- If one food w/in the FODMAP challenge leads to symptoms, try ½ portion or another selection from that group.

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WHY REINTRODUCE FODMAPS?

- Research has shown that the low FODMAP diet reduces bifidobacteria and other probiotic gut bacteria (butyrate-producing Clostridium cluster XIVa and mucus-associated Akkermansia muciniphila (Halmos, Gut 2015)
- Stool pH increases slightly on the low FODMAP diet---this may allow pathogenic microbes to grow. (Halmos, Gut 2015)
- The low FODMAP has been shown in 2 studies to increase gut microbial diversity—a good thing. (Halmos Gut 2015, McIntosh Gut 2016)

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BASIC GUIDELINES WHEN REINTRODUCING A FODMAP GROUP

- Test one FODMAP group (lactose, excess fructose etc.) at a time & choose foods that contain only one FODMAP.
- Consume a food amount that represents a normal intake (not excessive amounts).
- Continue to restrict all FODMAPS (maintain a low FODMAP diet) except the food that is being tested until tolerance or intolerance is confirmed.
- Record symptoms experienced for each challenge.
- Use the same food for each of the 3 challenge days.

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DETERMINE SENSITIVITIES WITH THE FOLLOWING FOODS:

- **Lactose:** ½ -1 cup milk
- **Fructose:** 1-2 tsp. honey or ½ mango
- **Fructans:** 2 slice wheat bread, 1 TB onion, ½ garlic clove
- **GOS:** ½ cup beans
- **Polyols:** ½ cup mushrooms, 1/3 cup cauliflower (mannitol) or 1 peach , 5 blackberries (sorbitol)

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WHAT IS A FAILED CHALLENGE?

- A failed challenge should be a noticeable & significant change in symptoms.
- Symptoms may resemble an IBS flare: diarrhea, cramping, return of constipation, bloating.
- = Undesirable outcome.

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The Re-Challenge Details

- Reintroduce challenge foods in setting of low FODMAP diet.
- Day #1, add in small amount of challenge food- as outlined.
- Day #2, if no symptoms, double challenge food portion.
- Day #3, keep portion the same or triple the Day#1 portion depending on patients normal intake of that food and assess tolerance.
- Abort challenge if undesirable* symptoms occur.

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BREAKING IT DOWN

| MANNITOL CHALLENGE | |
|--|----------------------|
| DAY 1 | ½ cup raw mushrooms |
| DAY 2 | 1 cup raw mushrooms |
| DAY 3 | 1½ cup raw mushrooms |
| NOTE: YOU CAN COOK THE MUSHROOMS. JUST MEASURE THE PORTION AMOUNT IN RAW FORM. | |

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BALANCED NUTRITION IS KEY FOR GI HEALTH

Include nutrient rich whole food carbohydrates to feed beneficial gut microbes

Healthy fats more omega 3 vs 6 at each meal. Too much can delay stomach emptying & lead to distention



Variety of fiber sources per personal tolerance; slows stomach emptying but can add bulk to stool + potential prebiotic.

Protein rich foods should be ¼ of plate

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Low FODMAP menu

- Breakfast: 1 cup cooked oats, handful blueberries, 1 tablespoon chia seeds, lactose free milk
- Lunch: slow leavened sourdough wheat bread, sliced chicken, romaine lettuce, sliced tomatoes, Dijon mustard, Swiss Cheese, orange and popcorn
- Snack: lactose free yogurt, suitable granola topping, sliced kiwifruit
- Dinner: Grilled fish, chicken, beef, firm tofu with baked potato, green beans.
- Dessert: Dark chocolate dipped strawberries

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FDA recognizes more carbs as fibers

- Inulin and inulin-type fructans, high-amylose starch (resistant starch 2), and polydextrose were among eight additional non-digestible carbohydrates recognized as fiber by the Food and Drug Administration on **June 14, 2018**.
- The F.D.A. ruled mixed plant cell wall fibers, a category that includes fibers like sugar cane fiber and apple fiber, also met its fiber definition as did arabinoxylan, alginate, galactooligosaccharide and resistant maltodextrin/dextrin.

<https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm620641.htm> accessed June 18, 2018

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NON-RESPONDER

Assess symptoms:

- > Bloating & post prandial fullness: r/o SIBO, gastroparesis,
- > Constipation: assess for slow transit constipation and/or dyssynergic defecation, high colonic stool burden, methane + SIBO
- > Diarrhea: parasitic infection, bile acid malabsorption, SIBO
- > Other food intolerance/sensitivities: gluten, fat, food chemicals-histamine, milk protein (A1 vs A2)
- > Consider probiotics, gut-directed hypnotherapy + other gut-brain directed therapies.

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A1 β -casein-free milk

- Goats, sheep, water buffalo and human breast milk contain A2-type beta casein protein.
- Due to a genetic mutation, cows can produce milk with three variations of β -casein:



- A1/A1
- A1/A2
- A2/A2



- Most dairy operations pool all of this milk together so conventional milk is a mix of A1/A2 β -casein proteins.
- It is possible to identify cows that produce A2/A2 through a simple genetic test. Milk produced by these cows is generally considered A1 protein-free.

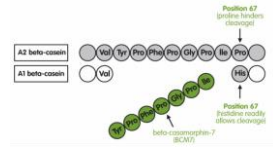
Slide courtesy of A2 milk/ Bonnie Johnson

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The result of A1 beta-casein digestion

Beta-casomorphin-7 (BCM-7), a peptide fragment and μ -opioid receptor agonist, is formed as a result of the incomplete digestion of A1 beta-casein.



This does not happen with A2 beta-casein which undergoes complete digestion*

BCM-7 is degraded by dipeptidyl peptidase IV (DPPIV). Activity of DPPIV varies between individuals leading to susceptible groups**

*Srinama & Yoshikawa (1998) Peptides

**Fest et al. (2009), Peptides.

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Food is Complicated!

- A low FODMAP diet modifies many food components – may reduce gluten, soy protein, fiber. Etc. Is the low FODMAP diet effective due to reduction of FODMAPs alone or reduction of other potential food related triggers?
- FODMAP content is variable in foods– ripeness of fruit can impact FODMAP content, food processing and fermentation of foods can alter FODMAPs. Low FODMAP diet is very portion driven. Not black and white.
- Placebo and nocebo effect
- Is food intolerance driven by alteration of gut microbial alterations (i.e. SIBO or dysbiosis)? Are we missing the root cause.
- Remind patients diet is often a piece of the puzzle – may not be the complete solution.

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Future

- Microbial signature may help guide best low FODMAP candidates
 - VOC testing
 - VOC=volatile organic compounds, metabolites created by gut flora
 - 100's of different VOCs
 - 15 VOCs predicted to 97% accuracy which pts responded to low FODMAP diet
- Fecal microbial assay may be another tool, in small pilot study with children, low FODMAP responders had different microbial signature.
- Probiotic + Prebiotics
- Personalized nutrition

Rossi M, et al. Clin Gastro Hep 2018; 16: 385-391. Chumpradit BP et al Alimentary pharmacology & therapeutics. 2015;42(4):418-427.

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RESOURCES

KATE SCARLATA.COM
BLOG, RECIPES, FREE DOWNLOADS, DIGESTIVE TIPS
www.katescarlata.com

MyGInutrition.com

CHECK OUT MY  CHANNEL: FOR A DIGESTIVE PEACE OF MIND

Monash University low FODMAP diet app

Low FODMAP Grocery Guide app 



FOR A DIGESTIVE PEACE OF MIND
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Credit Claiming

You must complete a brief evaluation of the program in order to obtain your certificate. The evaluation will be available for one year; you do not need to complete it on June 28, 2018.

Credit Claiming Instructions:

1. Go to CE.TodaysDietitian.com/IBS OR log on to CE.TodaysDietitian.com. go to "My Courses" and click on the webinar title.
2. Click "Take Course" on the webinar description page.
3. Select "Start/Resume Course" to complete and submit the evaluation.
4. Download and print your certificate.