

FODMAPs- Who, What, When, Where, How & Why

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Do.
Make.
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Reinvent the Future



Disclosures

- None



Learning Objectives

At the end of this session, participants should be able to:

1. List the components of the Fermentable Oligo- Di- Mono-saccharies And Polyols (FODMAP) family and their physiological effects on the gastrointestinal tract.
2. Describe the patient population that would benefit most from a low FODMAPs diet.
3. Categorize foods as high or low in FODMAPs.
4. Construct a plan for initial restriction as well as for reintroduction of high FODMAPs foods for long-term maintenance.
5. Identify additional medical conditions that may benefit from a low FODMAPs diet and the potential effects of long-term use.



Which patient population would benefit most from a low FODMAP diet ?

- A. Patients with Gastroesophageal Reflux Disease (GERD)
- B. Patients with Irritable Bowel Syndrome
- C. Patients with diverticulosis
- D. Patients with exocrine pancreatic insufficiency

A low FODMAP diet consists of mainly limiting:

- A. Proteins
- B. Fats
- C. Carbohydrates
- D. Alcohol

The elimination phase of a FODMAP diet should be:

- A. 1 week
- B. 1-2 weeks
- C. 2-6 weeks
- D. Lifelong

Who, What, When, Where, How & Why?



Who would benefit from a low FODMAPS diet?

- Patients with:
 - Irritable bowel syndrome (IBS)
 - Inflammatory bowel disease (IBD) who have functional gastrointestinal symptoms
 - Celiac disease who are still symptomatic on a strict gluten free diet
 - Non-celiac gluten sensitivity



IBS

- 10-20% of the population
- Functional GI disorder characterized by abdominal pain and altered bowel habits in the absence organic pathology
- Other symptoms:
 - Bloating
 - Excessive gas
 - Urgency
- Pathophysiology:
 - Increased visceral sensitivity
 - Altered gut motility
 - Dysbiosis



IBS

- There are many treatment approaches available for IBS
 - Diet and lifestyle
 - Nutrition supplements, herbs
 - Medications
 - Mental health
- For most people, diet and lifestyle changes are the best option for long-term relief of symptoms



What are FODMAPs?

- FODMAP is an acronym:
 - fermentable oligosaccharides, disaccharides, monosaccharides and polyols
- Identified in 2005 by the GI Dept at Monash University



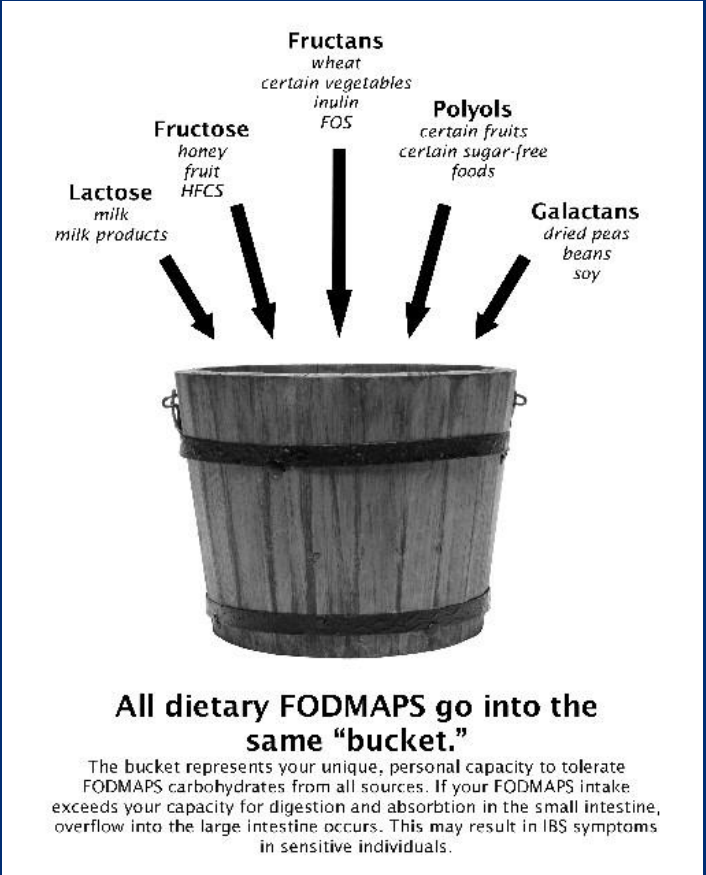
When are FODMAPs consumed?

- Fermentable short chain carbohydrates found in everyday foods:



Where?	Short-Chain Carbohydrate Subtypes and Sources
F fermentable	
O oligosaccharides	<p>Fructans: wheat, onions, garlic, inulin, chicory root, pistachios, cashews, teas- chamomile/chai</p> <p>Galacto-oligosaccharides: beans, lentils, green peas, soy beans/milk</p>
D disaccharides	Lactose: milk, yogurt, ice cream, cottage cheese, ricotta cheese
M monosaccharides	Fructose (in excess of glucose): high fructose corn syrup, honey, apples, pears, watermelon, mango, asparagus, artichoke, rum
A And	
P polyols	<p>Mannitol: cauliflower, mushrooms</p> <p>Sorbitol: blackberries, avocado, prunes</p> <p>Xylitol, maltitol, isomalt: candy, gum, mints sweetened with sugar-alcohols</p> <p>Medications: cough syrups, liquid non-steroidals and any suspensions, elixirs, etc.</p>





Example of a Typical Meal:

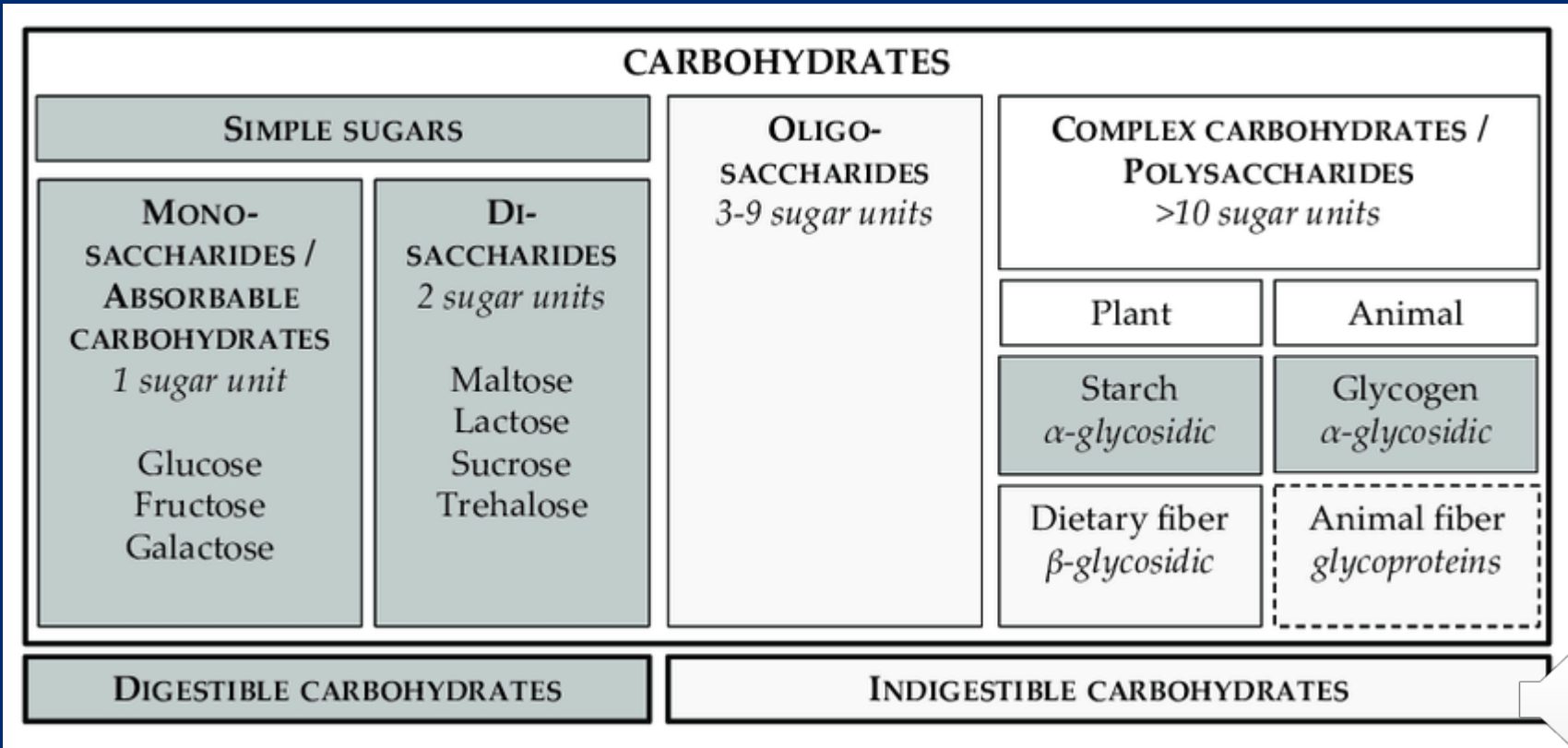
- Breakfast:
 - Frosted Mini Wheats & milk, tea & honey
- Lunch:
 - Wheat bread with turkey & American cheese, apple, cranberry juice
- Snack:
 - Peach flavored yogurt & pretzels
- Dinner:
 - Pasta with tomato sauce & meatballs, side of asparagus



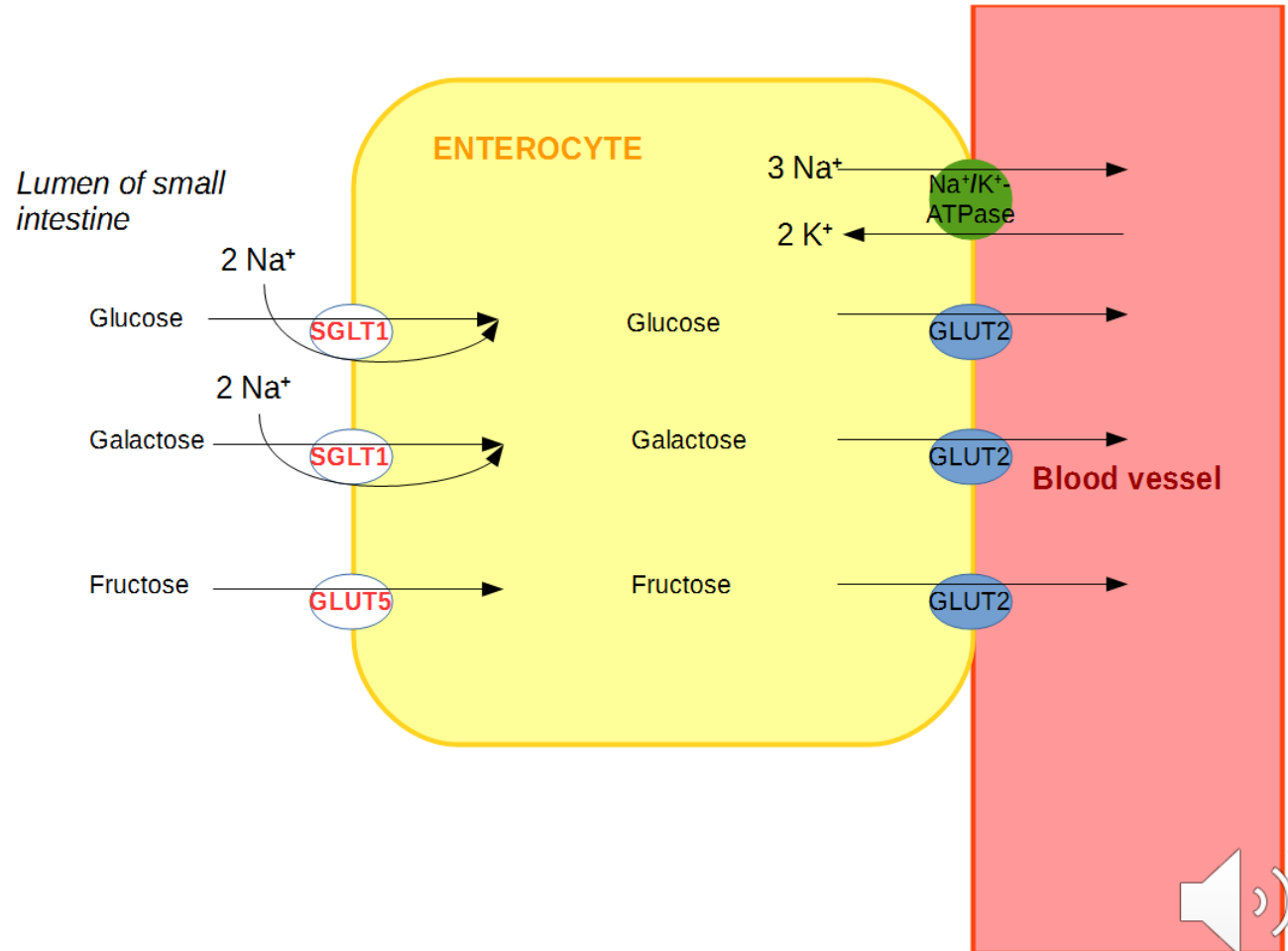
ID the FODMAPS:

- Breakfast:
 - Frosted Mini Wheats & milk, tea & honey
- Lunch:
 - Wheat bread with turkey & cheese, apple, cranberry juice
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How are Carbohydrates Absorbed ?



Why Problematic?

- Monosaccharides:
 - GLUT-2 relies on glucose to facilitate passage of fructose
 - Fructose:glucose ratio of 1:1 is ideal for absorption for fructose
- Disaccharides:
 - Lactose: 68% of the world's population is lactose nonpersistent
- Oligosaccharides:
 - Fructans & galacto-oligosaccharides: lack the enzyme to digest
- Polyols:
 - Sugar alcohols: slowly absorbed, found naturally and manufactured, dose dependent effect



Monosaccharides



Fruit	Serving size	Fructose (grams)	Fructose in excess of glucose (grams)
Apple	1 medium	10.74	6.32
Pear	1 medium	11.43	6.8
Cherries	100g	6.72	0.2
Banana	1 medium	5.72	Glucose > Fructose



Disaccharides



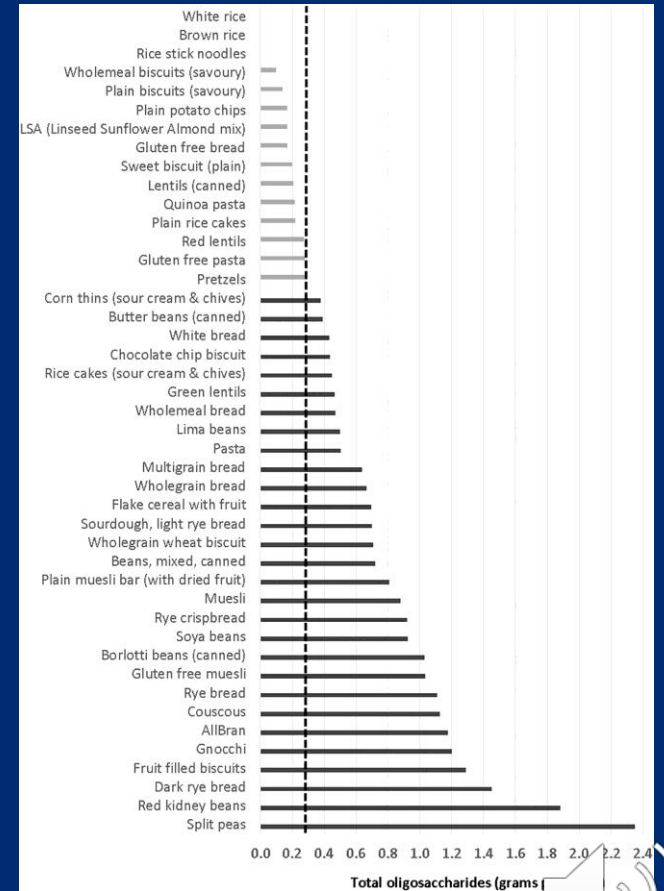
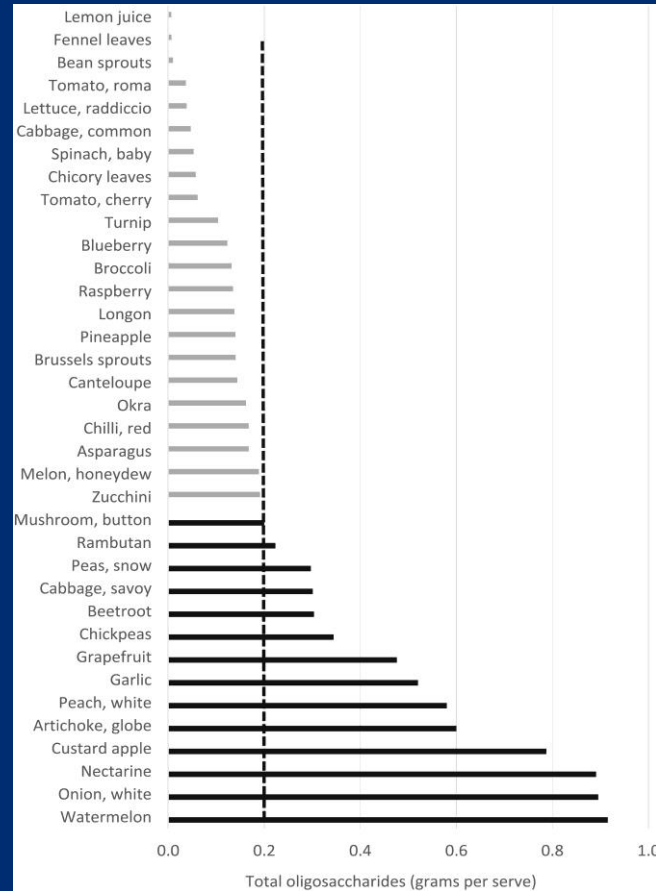
Lactose content of dairy products

Product	Lactose content (grams)
Milk (1 cup)	
Whole, 2 percent, 1 percent, skim	9-14
Buttermilk	9-12
Evaporated milk	24-28
Sweetened condensed milk	31-50
Lactaid milk (lactose-reduced)	3
Goat's milk	11-12
Acidophilus, skim	11
Yogurt, low fat (1 cup)	4-17
Cheese (1 ounce)	
Cottage cheese (1/2 cup)	0.7-4
Cheddar (sharp)	0.4-0.6
Mozzarella (part skim, low moisture)	0.08-0.9
American (pasteurized, processed)	0.5-4
Ricotta (1/2 cup)	0.3-6
Cream cheese	0.1-0.8
Butter (1 pat)	0.04-0.5
Cream (1 tablespoon)	
Light, whipping, sour	0.4-0.6
Ice cream (1/2 cup)	2-6
Ice milk (1/2 cup)	5
Sherbet (1/2 cup)	0.6-2

Adapted from: Scrimshaw NS, Murray EB. The acceptability of milk and milk products in populations with a high prevalence of lactose intolerance. *Am J Clin Nutr* 1988; 48:1079. Copyright © 1988 American Society for Clinical Nutrition.

Oligosaccharides

- Fructans &
- Glacto-oligosaccharides



Polyols-Sorbitol

Item	Serving Size	Sorbitol (grams)
Pear	1 fruit	3.8
Apple	1 fruit	0.5
Blackberries	10 berries	2.1
Nectarine	1 fruit	0.9
Prunes	1/4c	9.6
Sugar-free candy	4 pieces	15
Sugar-free gum	1 piece	1-2



Medications with Sorbitol

Acetaminophen

Acetaminophen and Phenylephrine Hydrochloride

Cetirizine Hydrochloride

Clonazepam

Cyclosporine

Diphenhydramine Hydrochloride and Ibuprofen diphenhydramine hydrochloride

Docusate Sodium

Ethosuximide

Gas Relief Extra Strength

Mucinex Fast-Max Cold, Flu & Sore Throat Liquid Gels

Mytab Gas

Ondansetron Hydrochloride (Orally Disintegrating)

Simethicone (Chewable) 80 mg

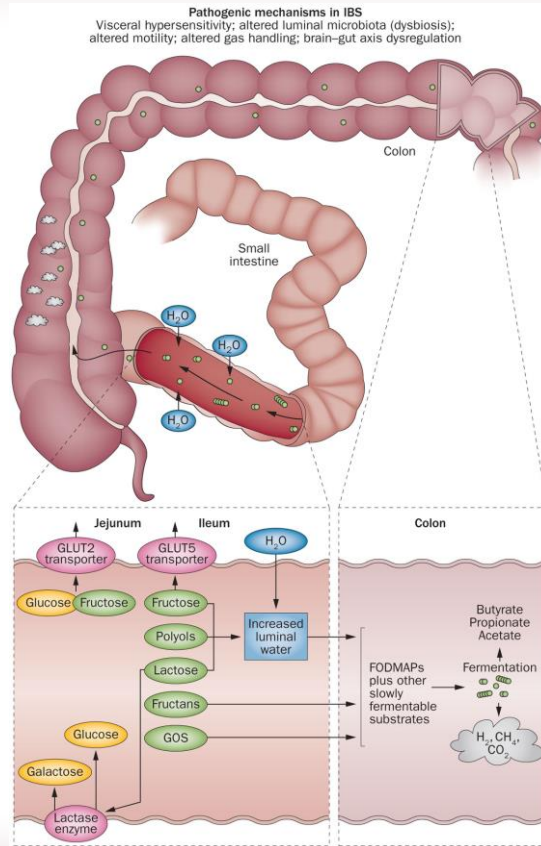


Examples of Crossover Foods

<u>Lactose</u>	<u>Fructose</u>	<u>Fructans/GOS</u>	<u>Polyols</u>
Milk	Artichoke	Artichoke	Cauliflower
Yogurt	Asparagus	Garlic	Mushrooms
Ice cream	Tomatoes	Onions	Peas
Ricotta	Apples	Beans	Apples
Cottage	Cherries	Apples	Pears
Custard	Figs	Figs	Plums
	Pears	Plums	Watermelon
	Watermelon	Wheat	Sorbitol
	Agave	Inulin	Xylitol
	Honey	Pistachios	
	HFCS	Watermelon	



Mechanisms by which short-chain fermentable carbohydrates might induce symptoms in IBS



Poorly Absorbed

- Osmotically active in the small intestine
- Fermented by bacteria in colon



Studies of the mechanisms underlying the effects of fermentable carbohydrates on gastrointestinal symptoms

Table 1 | Studies of the mechanisms underlying the effects of fermentable carbohydrates on gastrointestinal symptoms

Reference	Study design	Participants	Intervention	Outcome measures	Findings
Ong <i>et al.</i> (2010) ¹¹²	Randomized, single-blind, crossover	IBS (<i>n</i> =15) Healthy (<i>n</i> =15)	2-day high FODMAP diet (50g per day) 2-day low FODMAP diet (9g per day)	Hourly H ₂ profile for 14 h on day 2	Higher H ₂ production in high vs low FODMAP diet in both patients with IBS (242 ppm vs 62 ppm; <i>P</i> <0.001) and controls (181 ppm vs 43 ppm; <i>P</i> <0.001)
Barrett <i>et al.</i> (2010) ¹⁰⁹	Randomized, single-blind, crossover	IBD with ileostomy (<i>n</i> =12)	4-day high FODMAP diet 4-day low FODMAP diet	Effluent weight Effluent water content	Higher effluent weight on high vs low FODMAP diet (409g vs 504g; <i>P</i> =0.01) Higher water content on high vs low FODMAP diet (20% increase; <i>P</i> =0.013)
Marciani <i>et al.</i> (2010) ¹¹⁰	Randomized, single-blind, crossover	Healthy (<i>n</i> =11)	17.5g mannitol solution 17.5g glucose solution	Small bowel water content using MRI	Higher small bowel water content after mannitol vs glucose at 40 min (381 ml vs 47 ml; <i>P</i> <0.001)
Murray <i>et al.</i> (2013) ¹¹¹	Randomized, single-blind, crossover	Healthy (<i>n</i> =17)	40g fructose solution 40g glucose solution 40g inulin solution 40g fructose + 40g glucose solution	Small bowel water content using MRI	Higher small bowel water content following fructose (median 0–5h area under curve=67l/min) vs glucose (36l/min), which was reduced following combined fructose–glucose (46l/min) Inulin fructans did not affect small bowel water (33l/min), but increased colonic H ₂ production

Abbreviations: FODMAP, fermentable oligosaccharides, disaccharides, monosaccharides and polyols; H₂, hydrogen.



Studies investigating the effectiveness of fermentable carbohydrate restriction on IBS symptoms

Table 2 | Studies investigating the effectiveness of fermentable carbohydrate restriction on IBS symptoms

Reference	Study design	Participants	Duration	Symptom scoring	Findings
Shepherd <i>et al.</i> (2006) ¹¹⁵	Retrospective, uncontrolled	IBS with fructose malabsorption (n=62)	14 months (median)	Unvalidated symptom scoring tool (-10 to +10 scale)	85% of adherent patients had symptom improvement for all symptoms
Geary <i>et al.</i> (2009) ¹¹⁶	Retrospective, uncontrolled	IBD with functional gastrointestinal symptoms (n=72)	17 months (median)	Unvalidated symptom scoring tool (-10 to +10 scale)	56% of all patients had symptom improvement in overall symptoms
Østgaard <i>et al.</i> (2012) ¹¹⁷	Retrospective, case control	IBS, guided advice (n=43) IBS, unguided (n=36) Healthy (n=35)	Not reported	Birmingham IBS symptom score IBS-QoL	65% of participants completed the study Substantial reduction in pain in guided vs unguided, but not for total score, constipation or diarrhoea Marked improvement in QoL in guided vs unguided
De Roest <i>et al.</i> (2013) ¹¹⁹	Prospective, uncontrolled	IBS (n=90)	16 months (mean)	GI Symptom Rating Scale	Improvement in pain, bloating, nausea, flatulence, range of stool output measures 72% satisfied with overall IBS symptoms
Mazzawi <i>et al.</i> (2013) ¹¹⁸	Prospective, uncontrolled	IBS (n=46)	4 months (median)	Birmingham IBS symptom score IBS-QoL	37% of participants completed the study Total symptoms, pain and diarrhoea improved Marked improvement in QoL
Wilder-Smith <i>et al.</i> (2013) ⁶⁷	Prospective, uncontrolled	IBS (n=212) Other functional gastrointestinal disorder (n=1,160)	6–8 weeks	Unvalidated symptom scoring tool (1 to 10 scale)	Symptom relief in 90% and 94% of those considered 'intolerant' of fructose and lactose, respectively
Staudacher <i>et al.</i> (2011) ¹²⁰	Non-RCT (dietary advice)	IBS, low FODMAP (n=43) IBS, standard advice (n=39)	2–6 months	Unvalidated questionnaire (7-point scale 'substantially worse' to 'substantially improved')	Greater proportion of the intervention group satisfied with symptom response (76%) vs controls (54%) Greater proportion of the intervention group reported improvement in composite symptom score (86%) vs controls (49%)
Staudacher <i>et al.</i> (2012) ⁶⁰	RCT (dietary advice)	IBS, habitual diet (n=22) IBS, low FODMAP (n=19)	4 weeks	'Adequate relief' question GI Symptom Rating Scale Bristol Stool Form Scale	Greater proportion reporting adequate relief following low FODMAP diet (68%) vs control (23%) Reduced symptom score for bloating, borborygmi, urgency and overall symptoms following low FODMAP compared with controls
Ong <i>et al.</i> (2010) ¹¹²	Randomized blinded, controlled crossover (feeding study)	IBS (n=15) Healthy (n=15)	4 days	Unvalidated symptom scoring tool (0–3)	Median symptom score lower on low FODMAP diet (2) vs high FODMAP diet (6)
Halmos <i>et al.</i> (2013) ¹²¹	Randomized, blinded, controlled crossover (feeding study)	IBS (n=33) Healthy (n=12)	21 days	Unvalidated symptom scoring tool (100mm VAS) Stool frequency Stool water content	83% of participants completed the study Lower overall gastrointestinal symptoms on low FODMAP diet (23mm) vs a typical Australian diet (45mm) Reduced stool frequency in IBS-D during low FODMAP diet versus Australian diet

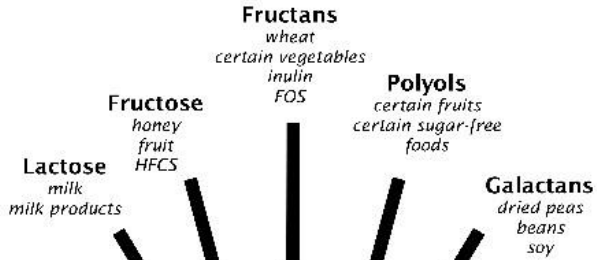
Abbreviations: FODMAP, fermentable oligosaccharides, oligosaccharides, disaccharides, monosaccharides and polyols; IBS-D, diarrhoea-predominant IBS; QoL, quality of life; RCT, randomized controlled trial; VAS, visual analogue scale.



Use in other GI Disorders besides IBS

- Patients with:
 - Inflammatory bowel disease who have functional gastrointestinal symptoms
 - Crohn's > Ulcerative Colitis
 - Celiac disease who are still symptomatic on a strict gluten free diet
 - 47% still symptomatic
 - Non-celiac gluten sensitivity





All dietary FODMAPS go into the same "bucket."

The bucket represents your unique, personal capacity to tolerate FODMAPS carbohydrates from all sources. If your FODMAPS intake exceeds your capacity for digestion and absorption in the small intestine, overflow into the large intestine occurs. This may result in IBS symptoms in sensitive individuals.



Low FODMAP Diet Implementation

- Three Phases:
 - 1. Elimination Phase:
 - Restrict **all** high FODMAP foods from the diet for **2-6 weeks**
 - 2. Re-introduction Phase:
 - Reintroduce small amounts of **one** food; gradually increase the dose day 2-3 if the food tolerated
 - Symptoms develop, 3-4 day wash out period
 - No symptoms, next FODMAP challenge begins
 - Process typically lasts **6-8 weeks**
 - 3. Maintenance Phase:
 - Long-term adherence to personalized modified diet



Low FODMAP Diet Implementation

Prepping the Patient:

- Diet: elimination phase, challenge phase
- Explain mechanisms of FODMAPs, bucket concept
- Education emphasizes what they can eat vs focusing on what they cannot
- Label reading and hidden sources of FODMAPs
- Cooking and recipe modifications
- Grocery shopping and dining out tips
- Personalized plan based on patient likes/dislikes, cooking skills, lifestyle
- **Referral to a Registered Dietitian**



AVOID

Restrict all high FODMAP foods from the diet for 2-6 weeks

High FODMAP Foods

(Avoid these foods during the FODMAP elimination phase)

Grains

Barley
Rye
Wheat (crackers, cereal, pasta, bread, baked goods) **sourdough bread is allowed*

Fruit

Apples/apple juice/cider
Apricot
Asian pear
Blackberries
Cherries
Dates
Figs
Fruit in natural juices
Grapefruit
Mango
Nectarine
Peaches
Pears/pear juice
Persimmon
Plums
Prunes
Watermelon

Vegetables

Artichoke
Asparagus
Cauliflower
Garlic
Leeks
Mushrooms
Onion/shallots
Sugar snap peas

Dairy

Custard
Frozen yogurt
Ice cream
Milk
Pudding
Soft cheese (cottage, ricotta)
Yogurt

Nuts/Legumes

Cashews
Pistachios
Legumes: black beans, kidney beans, pinto beans, baked beans, soy beans, hummus (canned chickpeas and lentils are allowed in small portions)

Sweeteners

Agave
High fructose corn syrup
Honey
Sugar alcohols (found in sugar-free gum, candy, and some medicine): sorbitol, mannitol, xylitol, maltitol, erythritol, isomalt,

Beverages

Chamomile, oolong, fennel, & chai tea
Coconut milk
Coffee made with chicory
Rice milk
Rum
Soy milk

Low FODMAP Foods

(Allowed during the elimination phase)

Grains and Starches

Cheerios (plain)*
Corn flakes*
Corn tortillas
Gluten free bread/cereal* Udi's GF white bread
Gluten free crackers*
Gluten free pasta: rice, quinoa, corn
Grits
Oatmeal (1/2 cup dry)*
Polenta
Popcorn
Potato
Potato Chips*
Quinoa
Rice, brown or white
Rice/popcorn cakes*
Rutabaga
Soba noodles, 100% buckwheat flour*
Sourdough bread- whole wheat or white (2 slices)*
Sweet potato (1/2 cup)
Tortilla chips*

Fruits

**Limit intake of fruits to one serving/ meal or snack.

Avocado (1/8th)
Banana
Blueberry
Cantaloupe
Clementine

Coconut, shredded (1/4 cup)
Cranberry
Dried cranberries and raisins (1 Tbsp)
Grapes
Honeydew melon
Kiwi fruit
Lemon or Lime
Mandarin orange
Orange juice
Orange
Papaya
Pineapple
Pomegranate (1/2)
Raspberry
Rhubarb
Strawberry

Vegetables

Alfalfa sprouts
Bamboo shoots
Bean sprouts
Bell pepper
Beet (2 slices)
Bok choy
Broccoli (1/2 cup)
Brussels sprouts (1/2 cup)
Carrots
Celery (1/4 stalk)
Cabbage (red, common cabbage or 1/2 cup savoy)
Chives
Corn (1/2 cob or 1/3 cup)
Cucumber
Endive

Eggplant
Fennel bulb
Green beans
Green peas (1/4 cup), snow peas (5 pods)
Kale
Lettuce (iceberg, romaine, baby lettuce, etc)
Okra (6 pods)
Olives
Parsnip
Pumpkin (1/4 cup)
Radish
Spinach
Spring onion/scallion (green part only)
Squash (butternut: ¼ cup)
Swiss chard
Tomato: (avoid sundried tomatoes and tomato products with added onion/garlic)
Turnip
Water chestnuts
Zucchini

Dairy

Almond milk*
Hard/aged cheeses: all, including feta
Hemp milk*
Kefir (99% lactose free)*
Lactose free ice cream*
Lactose free milk
Lactose free yogurt*
Lactose free cottage cheese



Allowed ingredients:

- Arrowroot
- Aspartame (~~Nutrasweet~~/Equal)
- Brown sugar
- Cane Sugar
- Coconut milk (canned; used in cooking)
- Confectioner's Sugar
- Corn Starch
- Corn Syrup (not HFCS)
- Dextrose
- Glucose
- Granulated Sugar
- Guar gum
- Invert sugar
- Maltodextrin
- Miso paste
- Molasses
- Pectin
- Raw Sugar
- Rice Syrup
- Saccharine
- Soy lecithin
- Soy Sauce
- Stevia
- Sucrose
- Sucralose (Splenda)
- Tabasco Sauce
- Tapioca
- Vinegar
- Wheat dextrin
- Wheat gluten
- Wheat starch
- Whey/soy protein isolate

Not allowed ingredients:

- Agave**
- Amaranth
- Bulgur wheat
- Carob
- Chicory root/inulin**
- Crystalline fructose
- Couscous
- Dry milk solids
- ~~Erythritol~~
- Flour-white/wheat
- Fructose**
- ~~Fucto~~-oligosaccharides
- Fruit juice concentrates (apple/pear)
- Garlic powder/salt**
- ~~Glycerine~~
- Glycerol
- Goat's milk
- High fructose corn syrup (HFCS)**
- Honey**
- ~~Isomalt~~
- ~~Karaut~~
- ~~Maltitol~~
- Mannitol
- Natural flavors (*in savory foods, i.e. broth*)
- Onion powder/salt**
- ~~Polydextrose~~
- Seasoned salt/pepper
- Sorbitol
- Spelt
- Sprouted wheat
- Texturized vegetable protein
- Wheat berries
- Xylitol



The image shows a smartphone screen with a 'Fruit' app. The app lists various fruits with their FODMAP status indicated by colored dots: green for allowed, yellow for not allowed, and red for not allowed. A legend on the right side of the slide explains these colors: a green circle points to a green checkmark, a yellow circle points to a yellow minus sign, and a red circle points to a red X. The smartphone screen shows the following items and their status:

- Avocado: Green dot (Allowed)
- Banana chips, dried: Green dot (Allowed)
- Banana, common (ripe): Red dot (Not Allowed)
- Banana, common (unripe): Green dot (Allowed)
- Banana, sugar (firm): Green dot (Allowed)
- Banana, sugar (ripe): Red dot (Not Allowed)
- Blackberry: Red dot (Not Allowed)
- Blueberry: Green dot (Allowed)
- Boysenberry: Red dot (Not Allowed)
- Breadfruit: Green dot (Allowed)



Label Reading

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INGREDIENTS: PEANUTS, CONTAINS LESS THAN 2% OF SEA SALT, SPICES (CONTAINS CELERY), DRIED ONION, DRIED GARLIC, PAPRIKA, NATURAL FLAVOR, SUGAR, CORN STARCH, GELATIN, TORULA YEAST, MALTODEXTRIN, DRIED CORN SYRUP.



One at a time

Process
typically lasts
6-8 weeks

FODMAP Challenge Phase

Lactose Challenge

Frozen yogurt*
Ice cream*
Milk, all types
Pudding*
Soft cheese (cottage, ricotta)
Yogurt*

Polyols Challenge

Sugar alcohols: isomalt, maltitol, mannitol,
sorbitol, xylitol, erythritol
Candy, gums, & medicines sweetened with
sugar alcohols

Sorbitol:

Apricot
Avocado (>1/8)
Blackberries
Peach (yellow)
Sweet corn (>1/2 cob)
Apples/apple juice**
Asian pear**
Cherries**
Nectarine**
Pears/pear juice**
Plum/prunes**

Mannitol:

Cauliflower
Celery (>1/4 stalk)

Revised 6/2015

Mushrooms
Snow peas (>5 pods)
Sweet Potato (>1/2 cup)
Butternut squash (>1/4 cup)**
Watermelon**

Fructose Challenge

Agave
Asparagus
Honey
High fructose corn syrup
Mango
Rum
Sugar snap peas
Apple/apple juice**
Artichoke**
Asian pear**
Cherries**
Pear/pear juice**
Watermelon**

Fructans Challenge

Barley
Beets (>2 slices)
Broccoli (>1/2 cup)
Brussels sprouts (>1/2 cup)
Cabbage, savoy (>1/2 cup)
Dates
Garlic
Grapefruit
Inulin/Chicory root

Leeks
Okra (>6 pods)
Onion/shallots
Pistachio, Cashews
Pumpkin (>1/4 cup)
Rye
Tea- chamomile, chai, fennel, oolong
Wheat* (crackers, cereal, pasta, bread,
baked goods)
Artichoke**
Nectarine**
Plum/prunes**
Watermelon**

Galactans (GOS) Challenge

*-Canned, rinsed, drained, and then cooked
beans will have lowest FODMAP amount.*
Legumes: chickpeas, lentils, black beans,
kidney beans, pinto beans, baked beans, soy
beans/soy milk, hummus*
Butternut squash (>1/4 cup)**
Green peas (>1/4 cup)**

*Check label for other FODMAP ingredients

**Food appears in more than one group

FODMAP FOOD CHALLENGE

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1. Disaccharide (Lactose)

Challenge food: ie Greek Yogurt

Amount

Day 1: _____

Day 2: _____

Day 3: _____

GI Symptoms

2. Monosaccharide (Fructose)

Challenge food: ie Honey

Day 1: _____

Day 2: _____

Day 3: _____

3. Oligosaccharide (Fructan)

Challenge food: ie Wheat

Day 1: _____

Day 2: _____

Day 3: _____

4. Polyol (Sorbitol)

Challenge food: ie Peach

Day 1: _____

Day 2: _____

Day 3: _____

- Guide patient
 - Review results
 - Additional foods
 - Repeat failures



Long-term Risks & Unanswered Questions

- Low fiber
- Low prebiotics
- Luminal bifidobacter reduction



Referral to a Registered Dietitian

1 / 4 >

JGH *Journal of Gastroenterology and Hepatology* **JGHF**
doi:10.1111/jgh.13690

REVIEW ARTICLE

Who should deliver the low FODMAP diet and what educational methods are optimal: a review

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Key words
education delivery, group education, irritable bowel syndrome, low FODMAP diet.

Accepted for publication 14 November 2016.

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Disclosures: The authors have nothing to disclose.

Abstract
Dietary management is being hailed as an effective strategy for the management of irritable bowel syndrome. Specifically, a diet low in fermentable carbohydrates (FODMAPs) has demonstrated efficacy in approximately 70% of patients. As evidence in support of the low FODMAP diet continues to emerge, there is increasing debate regarding implementation of the diet particularly concerning who should educate patients and how to educate them. Registered dietitians have largely pioneered the evidence that supports the effectiveness of the low FODMAP diet in irritable bowel syndrome, and the diet is recognized as a dietitian-led therapy. However, there is an increasing trend for non-dietitian-led implementation of the diet despite an absence of evidence on both the clinical or cost-effectiveness of such. Additionally, there is a growing requirement for dietetic services to increase capacity in response to increasing referrals, and consequently, there is a need to investigate innovative ways to educate patients whilst maintaining dietitian-led intervention. Herein, we review the evidence for delivery of the low FODMAP diet and discuss potentially effective methods for service delivery.

The low FODMAP diet is quickly becoming the cornerstone for effective dietary management in irritable bowel syndrome (IBS) with an expanding evidence base to support the clinical efficacy of the diet. It involves dietary restriction of high FODMAP foods for a period of 4–8 weeks followed by systematic reintroduction of individual FODMAPs to tolerance. The therapeutic nature of the low FODMAP diet is based on symptom improvement rather than addressing the underlying pathological cascade; therefore, it is a symptom management strategy and not a cure for IBS. It is a complex dietary strategy, and clinical effectiveness of the low FODMAP diet has been demonstrated using dietitian-led counselling; however, in clinical practice, often less comprehensive and unsubstantiated educational methods are increasingly implemented.

Who should deliver the low FODMAP diet
Clinical guidelines recognize the importance of the low FODMAP diet in the management of IBS.^{1,2} The National Institute for Health

predominantly arisen from dietitian-led low FODMAP advice.^{3–8} Non-dietitian-led implementation of the low FODMAP diet represents significant departure from the evidence base as well as recommendations from clinical guidelines.

There are an increasing number of robust randomized controlled trials (RCTs)^{9,10} and non-RCTs^{4,11,12} that support the use of the low FODMAP diet in IBS, all of which have utilized dietitian-led education. A crossover feeding study demonstrating the mechanistic basis for the low FODMAP diet¹³ and dietary FODMAP composition analyses have also been pioneered using dietitian-led education.^{14,15} In Australia, a dietitian-led randomized, crossover feeding study compared the low FODMAP diet to a typical Australian (control) diet in patients with IBS and healthy controls.³ The authors reported lower overall gastrointestinal symptom scores on the low FODMAP compared with the control diet. Individual symptoms, notably bloating, pain, and flatulence, were all significantly reduced with the low FODMAP but not the control diet. Feeding studies are advantageous in that all food and beverages

Patients benefit from instruction provided by a dietitian who specializes in GI nutrition and is familiar with the low FODMAP diet



Which patient population would benefit most from a low FODMAP diet ?

- A. Patients with gastroesophageal reflux disease (GERD)
- B. Patients with irritable bowel syndrome
- C. Patients with diverticulosis
- D. Patients with exocrine pancreatic insufficiency



A low FODMAP diet consists of mainly limiting:

- A. Proteins
- B. Fats
- C. Carbohydrates
- D. Alcohol



The elimination phase of a FODMAP diet should be:

- A. 1 week
- B. 1-2 weeks
- C. 2-6 weeks
- D. Lifelong



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