

Module 4, Lesson 7 Handout:
The Low FODMAP Diet

You may be familiar with the low FODMAP diet, which stands for the low fermentable, oligosaccharide, disaccharide, monosaccharide and polyols diet. This diet was developed by Dr. Peter Gibson and Dr. Susan Shepherd at Monash University in Australia as a way to help improve symptoms in people with different gastrointestinal disorders. FODMAPs are short chain carbohydrates that can cause several gastrointestinal symptoms due to limited absorption and fermentation in the small intestine and high osmotic activity. When these types of foods enter the gut, they're fermented by colonic bacteria which increases fluid and gas in the bowel. This diet involves eliminating and then reintroducing these foods into the diet in different phases (which we'll get into later on) to help identify exactly which foods are causing symptoms. Helping a client identify which foods cause symptoms and taking these foods out of the diet is the best approach to alleviate your client's gastrointestinal discomfort.

Oligosaccharides, Disaccharides, Monosaccharides and Polyols

This diet was named for the amount of carbohydrate units each potentially triggering food contains. Monosaccharides are single carbohydrate units, disaccharides are 2 carbohydrate units and oligosaccharides are 3 to 10 carbohydrate units. You may be familiar with the term polysaccharide as well, which is not in the FODMAP definition, but refers to having more than 10 carbohydrate units, or monosaccharides. The "P" in FODMAP actually stands for polyols, which we'll explain later on. Let's look at each type of carbohydrate to learn the types of foods and sugar molecules associated with them.

Oligosaccharides

Oligosaccharides include water soluble fiber known as fructans and galacto-oligosaccharides. Humans don't have an enzyme to break down either of these carbohydrates for proper absorption, so they go through the gut completely unabsorbed which is where they are fermented by bacteria. While this can help promote gut health for most people, this can lead to gas, bloating and discomfort for those with IBS. **Fructans** are chains of fructose sugars and can be found in **wheat, onions, shallots, garlic, asparagus, artichokes, broccoli and brussels sprouts**. They're also found in **inulin**, a prebiotic fermentable fiber found in chicory root and added to foods to promote gut health. **Galacto-oligosaccharides** are chains of galactose sugars and can be found in **legumes (chickpeas, lentils, kidney beans, green peas) and soy products**.

Disaccharides

Disaccharides are 2 units of monosaccharides and in the low FODMAP diet this refers to the disaccharide lactose, made of 1 galactose unit and 1 glucose unit, that is naturally found in cow's milk and commonly malabsorbed. There are two other forms of disaccharides which are maltose (2 glucose units) and sucrose (1 fructose unit and 1 glucose unit), however they are not focused on in the low FODMAP diet. As you learned in the Digestive Enzymes 101 handout from this lesson and briefly in Level 1, a lactose intolerance is when the body lacks lactase, the enzyme that aids in proper digestion and absorption of lactose. **Lactose** can be found in **cow's milk, yogurt, ice cream, pudding, custard and has a higher presence in softer, fresh cheese like cottage cheese, ricotta, mozzarella and feta.**

Monosaccharides

Monosaccharides are single carbohydrate units, and in the low FODMAP diet refer to fructose. There are 2 other monosaccharides which are glucose and galactose. Fructose is digested and absorbed via transportation into the gut by glucose transporters GLUT-2 and GLUT-5. People with IBS have variable tolerance for fructose. Research shows that some people with IBS can consume a fructose load of 25g before experiencing gastrointestinal symptoms, which are signs of intolerance and malabsorption. Others however can only consume about 5g before noticing symptoms - this varies from person to person. Due to the increase of added sugar in our food supply, high sugar products and those containing high fructose corn syrup, the average amount of fructose consumed per day in America is 80g. **Fructose** is commonly known as the sugar found in fruit and can be found in high amounts in **apples, pears, peaches and mangoes**, non fruit items such as **agave syrup and honey** and products with **high fructose corn syrup**.

Polyols

Polyols are sugar alcohols, such as sorbitol, mannitol and xylitol, found naturally in some fruits and vegetables and added as non-nutritive sweeteners to many sugar free items like gum, candy, mints and even some liquid medications. Like fructose, malabsorption of sugar alcohols depends on the gram amount, and can cause symptoms such as bloating and gastrointestinal discomfort. Research shows that these symptoms can occur with intakes around 10-20g of sorbitol per day. **Sorbitol** is found naturally in **pears, prunes, apples, cauliflower, mushrooms and stone fruits.**

Phases in the Low FODMAP Diet

The low FODMAP diet protocol has been shown to be successful in helping relieve symptoms of IBS. One study found improvement in symptoms among 75% of those who suffered from IBS that were following a low FODMAP diet. The diet has several stages, as outlined below.

- **Restriction / Elimination Phase**

- Not meant to last longer than 2 to 6 weeks, clients would eliminate FODMAP containing foods from their diet during this phase
- This allows gastrointestinal rest and better ability to identify symptoms from specific FODMAP foods as they are reintroduced in the next phase

- **Reintroduction / Challenge Phase**

- FODMAP containing foods are introduced slowly, one at a time, and symptoms are tracked by onset, duration, location and food association
- This phase can last several weeks (6 to 8 weeks)

- **Maintenance Phase**

- Once FODMAP food triggers are identified, the client's diet is modified to eliminate the foods that cause gastrointestinal discomfort and incorporate the foods that are tolerable
- Clients may reintroduce foods from time to time, as tolerance to certain FODMAP foods and symptoms may change overtime
- This phase is known as a long term low FODMAP diet, used for symptom relief and management

To summarize the above list, foods like cruciferous vegetables, dairy products containing cow's milk and foods that contain sugar alcohols, lactose and fructose can all exacerbate gastrointestinal symptoms for your clients who suffer from IBS. It's also important to note that some high FODMAP foods may still be okay to get in smaller portions, and may only be considered high FODMAP in a larger serving size. For example, Monash University states that 1 slice of bread (about 24g) is considered low FODMAP, however 2 slices (about 48g) is high FODMAP and should be avoided consuming in one meal for clients with IBS.

The low FODMAP diet itself can be challenging to work with as a new health practitioner. If you're not experienced in this area, it may better serve the client to refer her to a person who's well versed in low FODMAP diets.