

## What are FODMAPs?<sup>1-2</sup>

Fermentable oligo-, di-, and monosaccharides and polyols (FODMAPs) are found in everyday foods such as wheat, apples, onions, milk, and yogurt. While these are nutritious foods found in our daily diets, for certain individuals, such as those with irritable bowel syndrome (IBS), these foods may be problematic. In these cases, medium and high-level FODMAP foods are poorly absorbed in the small intestine and may feed the bacteria that normally live in the large intestine.

These are the five FODMAP food groups and their main food sources:

- **Fructose**—certain fruits, honey, and high-fructose corn syrup
- **Fructans**—certain vegetables, wheat and rye in large amounts, inulin, and fructo-oligosaccharides (FOS)
- **Galacto oligosaccharides (GOS)**—found in legumes
- **Lactose**—found in milk and milk products, particularly soft, unripened cheeses
- **Sugar polyols**—found in certain fruits, mushrooms, and sugar alcohols (sorbitol, mannitol)

While it is important to be familiar with the high- versus low-FODMAP foods, it is as important to look at the total amount of fermentable sugars consumed in any one meal. There appears to be a threshold for the amount of FODMAPs an individual can tolerate at one time.

## IBS, digestion, and a FODMAP diet

Symptoms of irritable bowel syndrome (IBS) such as abdominal pain, bloating and distension, excess gas, and diarrhea or constipation are common complaints. A low-FODMAP food plan has been found to be an effective treatment for those with IBS complaints.<sup>1-2</sup> It is believed that a diet containing highly fermentable but poorly absorbed short-chain carbohydrates and polyols (designated FODMAPs) triggers digestive symptoms in those who suffer from IBS.<sup>1-2</sup> This is due to an increase in the volume of liquid and gas in the digestive tract with subsequent rapid fermentation in both the small and large colon. The end result can be increased intestinal permeability, a predisposing factor to the development of IBS.<sup>1-2</sup>

Research has shown that IBS sufferers report relief of abdominal pain, distention, gas, and bloating by following this dietary approach. While FODMAPs may not be the cause of IBS, their dietary management helps to reduce symptoms in about 75% of patients.<sup>3</sup>

## Things to keep in mind

- **Stay away from the high:** Avoid all foods on the high-FODMAP list until instructed otherwise. There are no cheat days on this diet! The more compliant you are with the plan, the more effective and accurate the results will be.
- **Individual and total dose:** It is critical to consider the accumulated intake of FODMAPs over several days and track your compliance and symptoms on an ongoing basis.
- **What to expect:** Many people start to feel much better within a few weeks on the plan. However, if FODMAP carbohydrates are causing the symptoms, relief may be noted in just a few days.
- **Duration:** In order to ensure symptoms are well-controlled, a strict trial of the low-FODMAP diet is warranted for 6–8 weeks, keeping the total FODMAP load in mind. After a trial period of at least two weeks, your practitioner may guide you to slowly start reintroducing one FODMAP food at a time. Do not begin reintroducing foods until directed to do so by your practitioner.
- **Overall plan:** Foods that cause symptoms to return or to worsen should continue to be eliminated while additional FODMAP carbohydrates are slowly added back, one at a time. Using this method, it is possible to see which foods, if any, are correlated with IBS symptoms. A final diet will emerge that includes only those FODMAP carbohydrates that are well-tolerated. The goal is to plan the most varied diet possible while keeping symptoms under control. It is occasionally possible for individuals to find they can still consume a problem food, such as wheat, if they eat it in very small amounts.

## FODMAP guidelines<sup>1-2</sup>

- Refer to the FODMAP food list. Certain low-FODMAP foods could contribute to IBS-like symptoms, so pay attention if you happen to consume a low-FODMAP food and you experience symptoms.
- Fats and oils and unprocessed animal proteins do not contain any FODMAPs.
- Eat no more than one serving (one fruit or one cup of cut fruit) of allowable fruits per meal; allow 2-3 hours between fruits.
- While wheat, rye, and barley contain fructans, it is possible to have these ingredients in small amounts, such as in breading or garnish. This will need to be challenged to establish tolerance.
- Restrict lactose-containing foods.
- Avoid all high-FODMAP foods until directed otherwise by your practitioner.

## LOW- AND HIGH-FODMAP FOOD LIST<sup>4</sup>

### GRAINS & STARCHES: LOW-FODMAP: ALLOWED

\_\_\_\_\_servings/day

**Serving size: As indicated**

**1 serving = approx. 80 calories,**

**C = 15 g, P = 3 g, F = 0-1 g\***

- Buckwheat groats: ½ cup cooked
- Buckwheat noodles: ¾ cup cooked (buckwheat only —no wheat)
- Bread, gluten-free only, 1 slice (see product label)
- Crackers, rice, quinoa only, serving size varies (see product label)
- Millet: 1/3 cup cooked
- Oats, whole or steel-cut, gluten-free only: ½ cup cooked
- Pasta, rice, corn, quinoa only: ½ cup cooked
- Quinoa: 1/3 cup cooked
- Rice, basmati or brown: ⅓ cup cooked
- Teff: ½ cup cooked
- Tortilla, corn (no added gums): 1 small
- Wild rice: ½ cup cooked

**Note:**

- Avoid partially hydrogenated oils
- Avoid cornmeal flour and cornstarch
- Choose 100% whole grain products
- Organic, non-GMO varieties preferred

### GRAINS & STARCHES: HIGH-FODMAP: AVOID

- Amaranth
- Barley
- Bread (any bread or pita that contains kamut, rye, spelt, wheat)
- Bulgur
- Crackers containing: coconut, barley, lentil, garbanzo bean, pea, rye, soy, or wheat flours (see product label)
- Pasta: (any pasta that contains kamut, garbanzo bean, spelt, wheat, rye, pea, soy, lentil)
- Spelt or kamut berries
- Tortilla, whole wheat

### FRUIT: LOW-FODMAP: ALLOWED

\_\_\_\_\_servings/day

**Serving size: As indicated**

**1 serving = approx. 60 calories,**

**C = 15 g, P = 0 g, F = 0 g**

- Banana: ½ medium (firm, green)
- Breadfruit: ¾ cup cubed
- Cantaloupe: 1 cup cubed
- Clementine: 1 small
- Grapefruit: ½ large
- Grapes: 17 small
- Guava: 1 medium
- Kiwi: 2 small
- Lemon: 1 small
- Lime: 1 medium
- Mandarin: 1 small
- Orange: 1 small

### FRUIT: HIGH-FODMAP: AVOID

- Apples (all varieties)
- Apples, dried, unsweetened
- Applesauce, unsweetened
- Apricots
- Apricots, dried, unsweetened
- Blackberries
- Blueberries
- Boysenberries
- Cherries
- Cranberries, dried, unsweetened
- Figs
- Honeydew melons
- Mangos
- Nectarines
- Peaches (all varieties)
- Pears (all varieties)

**FRUIT: LOW-FODMAP: ALLOWED cont.**

- Passionfruit: 2 small
- Papaya: 1 cup cubed
- Prickly pear: 1 cup cubed
- Pineapple: ¾ cup cubed
- Starfruit: 1 small
- Strawberries: 1¼ cup whole
- Tangerines: 2 small

**FRUIT: HIGH-FODMAP: AVOID cont.**

- Plums (all varieties)
- Plums, dried, unsweetened (prunes)
- Pomegranates
- Raspberries
- Watermelon

**VEGETABLES: LOW-FODMAP: ALLOWED****Nonstarchy vegetables**

\_\_\_\_\_servings/day

**Serving size: Leafy greens: Approximately 2-3 cups, raw**

**All others: ½ cup cooked or 1 cup raw**

**1 serving = approx. 25 calories, C = 5 g, P = 1-2 g, F = 0 g**

- Bamboo shoots
- Bean sprouts
- Bottle gourd
- Broccoli (heads only)
- Broccoli flower
- Cabbage (bok choy, green, nappa, red)
- Cactus (nopales)
- Carrots
- Celery root
- Chayote
- Cucumber
- Eggplant
- Green or string beans
- Hearts of palm
- Jicama
- Kohlrabi
- Leafy greens (arugula, beet, collard, dandelion, endive, escarole, kale, spinach, Swiss chard, radicchio, watercress)
- Lettuce (Boston bibb, butter, frisee, green leaf, red leaf, romaine)
- Okra
- Peppers (bell, jalapeño, poblano, sweet)
- Radishes (daikon, cherry belle, white icicle, watermelon)
- Rutabaga
- Sea plants (aramé, dulse, kombu, kelp, nori)
- Scallions: green part only
- Spaghetti squash
- Sprouts

**VEGETABLES: HIGH-FODMAP: AVOID****Nonstarchy vegetables**

- Artichoke
- Asparagus
- Beets
- Bitter melon
- Broccolini
- Brussels sprouts
- Cabbage (Savoy)
- Cauliflower
- Celery
- Fennel
- Garlic
- Jerusalem artichoke
- Kimchi
- Leeks
- Mushrooms
- Onions (brown, red, scallions/spring/green onions [white part only], shallot, white, yellow)
- Sauerkraut
- Sugar snap peas, snow peas

**VEGETABLES: LOW-FODMAP: ALLOWED cont.**

- Summer squash (crookneck, delicata, yellow, zucchini, patty pan)
- Tomatoes
- Turnips
- Water chestnuts

**Starchy vegetables**

\_\_\_\_\_servings/day

**Serving size: As indicated****1 serving = approx. 80 calories,****C = 15 g, P = 3 g, F = 0-1 g**

- Parsnips: ¾ cup
- Potatoes:
  - Yukon gold: ½ medium
  - Fingerling: 3-4 small
  - Red: ½ medium
  - Blue or purple: 1 small
- Squash:
  - Acorn: ¾ cup cubed
  - Kabocha: ½ cup cubed
  - Pumpkin, canned, unsweetened: 1 cup
- Sweet potato: ½ cup cubed
- Yam: ½ cup cubed

**Note:**

- Fresh, organic preferred. If fresh not available, frozen varieties are allowed.

**DAIRY & DAIRY ALTERNATIVES: LOW-FODMAP: ALLOWED****Dairy**

\_\_\_\_\_servings/day

**Serving size: As indicated****1 serving = approx. 100-150 calories,****C = 12 g, P = 8 g, F = 5-8 g**

- Kefir, plain: 1 cup (lactose-free)
- Milk: 1 cup (lactose-free)
- Yogurt: ½ cup (lactose-free)

**VEGETABLES: HIGH-FODMAP: AVOID cont.****Starchy vegetables**

- Green peas
- Lotus root
- Squash:
  - Butternut
- Yucca

**DAIRY & DAIRY ALTERNATIVES: HIGH-FODMAP: AVOID****Dairy**

- Buttermilk
- Evaporated and condensed milk
- Milk—dairy (cow, sheep or goat)
- Ice cream, pudding, milk powders
- Yogurt, all (non-lactose-free)

**DAIRY & DAIRY ALTERNATIVES: LOW-FODMAP: ALLOWED cont.**

**Dairy alternatives**

\_\_\_\_\_servings/day

**Serving size: As indicated**

**1 serving = approx. 25-75 calories,**

**C = 2-15 g, P = 2-8 g, F = 3-6 g**

- Almond milk: 1 cup
- Cashew milk: 1 cup
- Coconut milk: 1 cup (inulin-free)
- Flax milk: 1 cup
- Hemp milk: 1 cup
- Rice milk: 1 cup
- Soy milk: 1 cup
- Yogurt: coconut (inulin-free): ½ cup

**Note:**

- Organic, plain, unsweetened varieties only
- Choose boxed variety for all nondairy beverages
- Avoid nondairy creamers

**PROTEINS: LOW-FODMAP: ALLOWED**

\_\_\_\_\_servings/day

**Serving size: As indicated**

**1 serving = approx. 150 calories,**

**C = 0 g, P = 14-28 g, F = 1-9 g**

- Beef
  - Lean, all cuts: 3 oz.
- Buffalo: 3 oz.
- Cheese
  - Cottage: ¾ cup
  - Feta: 2 oz.
  - Goat: 2 oz.
  - Mozzarella: 2 oz. or ½ cup shredded
  - Ricotta: ½ cup
- Chicken, skinless, white or dark meat: 3 oz.
- Cornish hen, skinless: 4 oz.
- Eggs, whole: 2
- Egg whites: 1 cup
- Elk: 3 oz.
- Fish
  - Salmon
    - Canned: 3 oz.
    - Fresh: 3 oz.
    - Smoked: 3 oz.

**DAIRY & DAIRY ALTERNATIVES: HIGH-FODMAP: AVOID cont.**

**Dairy alternatives**

- Oat milk

**PROTEINS: HIGH-FODMAP: AVOID**

- Sausage
- Any processed meats that may contain garlic or onion powder or salts or other FODMAP ingredients

**PROTEINS: LOW-FODMAP: ALLOWED cont.**

- Fish cont.
  - Herring: 3 oz.
  - Mackerel: 2 oz.
  - Sardines (in water): 3 oz.
  - Trout: 4 oz.
  - Tuna
    - Canned, chunk light or solid light (in water): 4 oz.
    - Skipjack: 4 oz.
    - Yellowfin: 4 oz.
- Lamb, leg, chop, or lean roast: 3 oz.
- Pork, tenderloin: 3 oz.
- Shellfish
  - Mussels, octopus, oysters, scallops, squid: 3 oz.
  - Lobster, shrimp: 6 oz.
  - Clams, crabs: 8-9 oz.
- Turkey, skinless, white or dark meat: 3 oz.
- Venison: 3 oz.

**PROTEINS: HIGH-FODMAP: AVOID cont.****PLANT-BASED PROTEINS: LOW-FODMAP: ALLOWED**

\_\_\_\_\_servings/day

**1 serving= approx. 150 calories,  
C = 12-15 g, P = 10-15 g, F = 0-8 g**

- Beans, garbanzo, pinto canned only, drained: ½ cup
- Bean soups: ¾ cup, made from canned, drained garbanzo or pinto beans only
- Lentils (brown, red, yellow) cooked, canned, drained: ¼ cup cooked
- Hummus (made from canned, drained garbanzo beans only): ¼ cup+2 Tbsp.
- Tempeh (plain/no garlic): 3 oz.
- Tofu (firm only/drained): 6 oz.
- Seitan: 3 oz.

**PLANT-BASED PROTEINS: HIGH-FODMAP: AVOID**

- Beans: adzuki, black-eyed, black, garbanzo (dried), cannellini, edamame, kidney, lima, mung, navy, pinto (dried) etc.
- Beans: vegetarian refried
- Fava
- Lentils: French green
- Peas (pigeon, split)
- Soybeans (including edamame)
- Tofu (silken)
- Soy products such as TVP

**OILS & FATS: LOW-FODMAP: ALLOWED**

\_\_\_\_\_servings/day

**Serving size: As indicated****1 serving = ~45 calories, C = 0 g, P = 0 g, F = 5 g**

- Avocado: 2 Tbsp.
- Avocado oil: 1 tsp.
- Butter: 1 tsp.
- Canola: 1 tsp.
- Coconut milk (inulin free)
  - Light, canned: 3 Tbsp.
  - Regular, canned: 1.5 Tbsp.

**OILS & FATS: HIGH-FODMAP: AVOID****None**

**OILS & FATS: LOW-FODMAP: ALLOWED cont.**

- Coconut oil: 1 tsp.
- Coconut spread: 1.5 tsp.
- Flaxseed oil: 1 tsp.
- Ghee/clarified butter: 1 tsp.
- Grapeseed oil: 1 tsp.
- Garlic infused oil: tsp.
- High-oleic safflower oil: 1 tsp.
- High-oleic sunflower oil: 1 tsp.
- Mayonnaise, unsweetened (made with avocado, grapeseed, or olive oil): 1 Tbsp.
- Olive oil, extra virgin: 1 tsp.
- Olives: 8-10 medium
- Sesame oil: 1 tsp.

**Note:**

- Oils should be minimally refined, non-GMO, and organic
- Nut and seed oils should be refrigerated to prevent rancidity
- First cold-pressed or cold-pressed olive oil preferred
- Choose expeller pressed nut, seed, and coconut oils when available

**OILS & FATS: HIGH-FODMAP: AVOID cont.****NUTS & SEEDS: LOW-FODMAP: ALLOWED**

\_\_\_\_\_servings/day

**Serving size: As indicated**

**1 serving = approx. 45 calories, C = 0 g, P = 1 g, F = 5 g**

- Almond butter: 1.5 tsp.
- Brazil: 2
- Chia seeds: 1 Tbsp.
- Coconut, unsweetened, shredded: 1.5 Tbsp.
- Flaxseed, ground: 1.5 Tbsp.
- Hazelnuts: 5
- Hemp seeds: 2 tsp.
- Macadamia: 3
- Pecans: 4 halves
- Pine nuts: 1 Tbsp.
- Pumpkin seeds: 1 Tbsp.
- Sesame seeds: 1 Tbsp.
- Soy nuts, roasted: 2 Tbsp.
- Sunflower seeds: 1 Tbsp.
- Tahini: 1.5 tsp.
- Walnuts: 4 halves

**Note:**

- Raw, unsalted, organic varieties preferred
- Choose nut butters that are free from partially hydrogenated oils

**NUTS & SEEDS: HIGH-FODMAP: AVOID**

- Almonds
- Pistachios
- Cashews
- Cashew butter

**OTHER: LOW-FODMAP: ALLOWED****Beverages**

- Coffee (8 oz. max)
- Espresso (3 oz. max)
- Green tea, rooibos tea (unsweetened)
- Noncaffeinated herbal teas (mint, hibiscus, etc.)
- Mineral water (still or carbonated)

**Note:**

- Organic coffee and tea preferred

**Condiments, herbs, & spices**

- Broth: vegetable- or animal-based (made without garlic or onion or garlic/onion powders or salts)
- Cacao (powder/nibs)
- Carob
- Flavored extracts (ex. almond, vanilla)
- Ginger
- Herbs, all, fresh or dried (ex. dill, basil, chives, cilantro, mint, oregano, rosemary, sage, thyme, etc.)
- Horseradish
- Hot sauce
- Liquid amino acid
- Miso
- Mustard
- Salsa, unsweetened (made without fresh garlic or onion, or dried garlic/onion powder or salts)
- Soy sauce/tamari
- Spices, fresh or dried (ex. chili powder, cardamom, cinnamon, cumin, curry, ginger powder, paprika, pepper, turmeric, etc., avoid garlic/onion powder or salts)

**Allowable sweeteners**

- Luo han guo (monkfruit extract)
- Stevia

**Note:**

- Recommend limiting to no more than 1 serving per day to reduce cravings for sweet-tasting food

**OTHER: HIGH-FODMAP: AVOID****Beverages**

- Tea, black, chai, chamomile, kombucha, chai, fennel

**Condiments, herbs, & spices**

- Blackstrap molasses
- Broth: vegetable- or animal-based (made with fresh garlic or onion, or dried garlic/onion powder or salts)
- Garlic
- Spices: garlic/onion powders or salts
- Tomato sauces (made without fresh garlic or onion or dried garlic/onion powder or salts)

**Food preparation tips**

- Animal proteins should be grilled, baked, poached, roasted, stewed, sautéed, or slow-cooked
- Vegetables should be baked, blanched, grilled, lightly sautéed, roasted, steamed, or eaten raw
- Use broth or “seasoned stock” when cooking meats, lentils, vegetables, etc. to minimize using too much oil/fat. Recommend using organic, low-sodium varieties.

**Note:** This is not a full FODMAP list for allowable or foods to avoid. There are a few items on this FODMAP list that are not on the Modified Mediterranean Food List to allow more flexibility for the FODMAP meal plan. Please see Monash University FODMAP Diet for more information.

**Metagenics Institute is not affiliated with Monash University.**

#### References

1. Hill P et al. Controversies and recent developments of the low-FODMAP. *Gastroenterol Hepatol.* 2017;13(1):36-45.
2. Nanayakkara WS et al. Efficacy of the low FODMAP diet for treating irritable bowel syndrome: the evidence to date. *Clin Exp Gastroenterol.* 2016;9:131-142.
3. Werlang ME et al. Irritable bowel syndrome and dietary interventions. *Gastroenterol Hepatol.* 2019;15(1):16-26.
4. Data from Monash University FODMAP website and app: [https://www.monashfodmap.com/3\\_step\\_fodmap\\_diet/](https://www.monashfodmap.com/3_step_fodmap_diet/). Accessed February 19, 2021.

