

Low fermentable carbohydrate diet

How can a low fermentable carbohydrate diet help me?

This diet is recommended for people who have these symptoms:

- gas
- bloating
- burping
- abdominal cramping or pain
- diarrhea and/or constipation

Carbohydrates (or sugars) of short chain length are often poorly absorbed, highly osmotic (meaning they pull water into the intestine) and quickly fermented by the bacteria in the large intestine. This leads to increased water and gas in the bowel and causes the above symptoms.

If you are sensitive to fermentable carbohydrates, reducing your intake may help improve your symptoms. You may see an improvement within a few days or weeks. Symptoms generally improve in 3 out of 4 people.

The low fermentable carbohydrate diet is also called the low FODMAP diet (**F**ermentable **O**ligosaccharides, **D**isaccharides, **M**onosaccharides **A**nd **P**olyols).

Which carbohydrates are fermentable?

Fructose or fruit sugar, is a natural occurring simple sugar found in fruits, vegetables and honey. Fructose is also added to many food products as glucose-fructose. How well you absorb fructose depends partly on the amount of other sugars such as glucose, sucrose (table sugar) and sorbitol in the foods that you eat.

Foods with excess fructose compared with glucose will likely trigger symptoms. Foods with excess fructose combined with naturally occurring polyols, such as apples and pears, will likely trigger more severe symptoms.

Lactose is a natural occurring simple sugar found in milk and milk products. Lactose intolerance is caused by partial or complete lack of the enzyme lactase which helps you digest lactose.

Fructans are made up of chains of fructose. They are found naturally in some vegetables and wheat based foods (breads, cereals and pasta).

They are completely malabsorbed because the intestine lacks an enzyme to break the fructose-fructose bonds. On a food label, fructans are often called fructo-oligosaccharides or inulin and are often added to foods such as yogurt, bread and pasta.

Galactans are made up of chains of the sugar galactose, and are malabsorbed for the same reason as fructans.

They are found in legumes such as kidney beans, chick peas and lentils and also found in some vegetables such as onions and peas.

Polyols are also known as sugar alcohols. They are naturally found in some fruits (apples, pears and their related juices and in “stone fruits” such as nectarines, peaches, plums, apricots, cherries, avocados and dried fruits such as prunes, figs and raisins) and vegetables (mushrooms, sweet corn).

They are also often added as sweeteners to sugar-free candies, gums, mints and medications.

Do I need to avoid glucose-fructose?

Fructose is added to many foods as glucose-fructose, also called high fructose corn syrup in the United States.

Glucose-fructose is present in soft drinks, sports drinks, chocolate milk, condiments, breakfast bars, flavoured yogurts, jams and jellies. Glucose-fructose can be created with various amounts of fructose and glucose, but most often contains 55% fructose and 45% glucose.

Since the amount of glucose to fructose is not listed on food labels, limit or avoid foods containing glucose-fructose.

Do I need to avoid sucrose?

Although sucrose contains fructose, it also contains glucose in an equal amount and is generally well tolerated by many people when eaten in moderation.

Low fermentable carbohydrate meal plan

Serving sizes are provided for the foods that may cause you symptoms.

Food Group	Foods to Eat	Foods to Avoid
<p>Protein</p> <p>Nuts: 10 to 15 a day or Seeds: 1 to 2 Tbsp a day or Nut butters: 1½ to 2 Tbsp a day</p>	<p>Beef, chicken, lamb, pork, turkey, fish, shellfish</p> <p>eggs</p> <p>firm tofu (blocks)</p> <p>tempeh</p> <p>nuts: almonds, chestnuts, macadamia, peanuts, pecans, pine nuts, walnuts</p> <p>chestnuts (20 a day)</p> <p>seeds: chia seeds, flaxseed, hemp seeds, pumpkin seeds, sesame seeds, sunflower seeds</p> <p>nut butters (peanut, almond)</p>	<p>foods made with fruit sauces or breaded</p> <p>silken tofu</p> <p>chickpeas, hummus</p> <p>kidney beans</p> <p>black beans</p> <p>baked beans</p> <p>navy beans</p> <p>soy beans, edamame</p> <p>soy milk</p> <p>lentils</p> <p>pistachios, cashews</p>

Food Group	Foods to Eat	Foods to Avoid
<p>Dairy</p> <p>(If you are lactose intolerant)</p>	<p>beverages: almond, coconut, hemp, rice or oat</p> <p>butter</p> <p>cheeses such as blue, cheddar, camembert, cream cheese, dry curd cottage cheese, colby, processed, parmesan, limburger, mozzarella, swiss, brie, feta</p> <p>coconut cream</p> <p>cottage cheese – lactose free</p> <p>ice cream – lactose free</p> <p>kefir – lactose free</p> <p>milk (cow) – lactose free</p> <p>yogurt – lactose reduced</p> <p>sour cream – lactose free</p>	<p>cheese sauce</p> <p>cheese: marscapone, ricotta, cottage cheese</p> <p>creams, all (if more than 1 Tbsp)</p> <p>milk: cow, buttermilk, evaporated, chocolate, goat, sheep, soy</p> <p>soups made with milk or cream</p> <p>sour cream</p> <p>sweetened condensed milk</p> <p>yogurt and yogurt-based drinks</p>
<p>Grains</p> <p>1/2 cup cooked grains, pasta and cereals</p> <p>1 slice bread</p> <p>Limit to 6 to 8 servings a day</p>	<p>wheat-free grains/flours: amaranth, arrowroot, buckwheat, corn, corn bran, corn meal, millet, quinoa, rice, rice bran, sorghum, tapioca</p> <p>gluten free bread, cereals, pastas and crackers without honey, apple/pear juice, agave or glucose-fructose</p> <p>hot/cold cereals: Corn Flakes, Rice Krispies, Cheerios, cream of rice, grits, oats, oatbran</p> <p>corn tortillas (1), tortilla chips (10 to 15), popcorn (1 ½ cup), polenta (1/2 cup)</p> <p>corn and rice pasta</p> <p>spelt bread and spelt pasta</p>	<p>wheat based products: couscous, breads, cereals, pasta, tortillas, baked goods (cakes, cookies, muffins, pastries), crackers, biscuits</p> <p>wheat flours (durum, enriched, farina, graham, semolina, cake and pastry, white flours)</p> <p>barley</p> <p>chicory root (inulin)</p> <p>grains made from wheat (einkorn, emmer, triticale, kamut)</p> <p>rye</p>

Food Group	Foods to Eat	Foods to Avoid
<p>Fruit</p> <p>1/2 cup whole fruit, 1/3 cup allowed juices</p> <p>Limit to 1 to 2 servings a day</p> <p>Fresh or frozen fruit may be better tolerated than canned fruit</p> <p>Eat ripe fruit</p>	<p>bananas, blueberries, boysenberries, clementine, cranberries, cantaloupe, dragon fruit, durian, grapefruit (1/2 medium), grapes, honeydew melon, kiwi fruit, kumquat, lemon, lime, mandarin, orange, papaya, passion fruit, paw paw, pineapple, prickly pear, pomegranate (limit to 1/4 cup seeds), raspberries, rhubarb, star fruit (carambola), strawberries, tangelo</p>	<p>avocado*, apple*, applesauce*, apple juice*, apple cider*, apricots*, blackberries*, cherries*, dried fruit (dates, raisins, figs, prunes*), guava, lychee*, mango, nashi fruit*, nectarine*, peach*, pears* and pear juice*, persimmon, plums*, quince, tamarillo, watermelon* canned fruit packed in pear juice or heavy syrup.</p> <p>* Contain sugar alcohols</p>
<p>Vegetables</p> <p>½ cup for most vegetables, 2 cups leafy green vegetables</p> <p>Limit to 1 to 3 servings a day</p> <p>Cooked vegetables may be better tolerated</p>	<p>alfalfa, bamboo shoots, bean sprouts, green beans, bok choy, carrots, celery (limit to ½ stalk), chives, cucumber, choy sum, eggplant, fennel bulb (½ cup), ginger, bell and hot peppers, green leafy herbs (parsley, cilantro, oregano, dill, rosemary, mint, thyme), kale, kohlrabi, leafy greens (endives, spinach, arugula, swiss chard), lettuce (butter, iceberg), okra, green peas (1/3 cup), parsnip, pumpkin, radish, rutabaga, scallions or spring onions (green part only), nori seaweed, winter squash (acorn, butternut), snow peas (limit to 5), tomato, turnip, white and sweet potato, water chestnuts, yam, zucchini</p>	<p>artichoke (Jerusalem and Globe), asparagus, beetroot, broccoli, brussels sprouts, burdock, cabbage, cauliflower*, chicory roots and greens, sweet corn*, dandelion greens, garlic and garlic powder, leek, mushrooms*, onion (brown, white, spanish, onion powder), radicchio lettuce, relish, shallots, spring onion (white part), tomato paste</p> <p>* Contain sugar alcohols</p>

Food Group	Foods to Eat	Foods to Avoid
Desserts	chocolate (limit to 30 grams) custards, puddings made with lactose free milk sorbet from allowed fruits	custards, puddings ice cream, candy, cookies sweetened with fructose
Sweeteners	aspartame, sucralose, stevia, acesulfame K, cyclamate sugar, white or brown (sucrose), corn syrup, glucose (tablets, powder, syrup), golden syrup (limit to 1½ Tbsp a day), pure maple syrup	agave syrup, glucose-fructose, honey, mannitol, maltitol, molasses, sorbitol, xylitol,
Alcohol and Other beverages	coffee, tea (black, green, white, peppermint) (limit to 1 cup a day) glucose sweetened sports/energy drinks sucrose sweetened soft drinks (limit to 355 ml a day) vodka, gin (limit to 1.5 oz a day) wine, dry (limit to 4 to 5 oz a day)	tea: chamomile, dandelion, fennel, oolong, strong chai tea, any fruit based teas with chicory root chicory-based coffee substitute beverages coconut water glucose-fructose sweetened soft drinks glucose-fructose sweetened sports/energy drinks beer, cider, rum, sherry, port, sparkling wine, sweet wines
Other foods	baking powder, baking soda, vanilla extract butter, olives, margarine, mayonnaise, vegetable oils coconut meat homemade broth made from allowed vegetables ketchup, mustard, pickles, relish, soy sauce most spices and herbs including chili powder, pepper, salt psyllium salad dressing without glucose-fructose vinegar	cocoa inulin, fructo-oligosaccharides, galacto-oligosaccharides jams, jellies with fruits to avoid and/or glucose-fructose, relish with glucose-fructose, sweet and sour sauce, plum sauce, barbeque sauce with glucose-fructose, chutney

Tips to help you follow a low fermentable carbohydrate diet

- Follow the low fermentable carbohydrate diet for at least 2 to 3 weeks.
- Record your food and symptoms in a diary to identify bothersome foods.
- Read food labels. Avoid foods made with fructose, glucose-fructose, fruit sugar, inulin, fructo-oligosaccharides, fruit juice concentrate, invert sugar, honey, wheat and rye.
- Buy gluten free breads and pasta as they are wheat free. Gluten free grains made with potato, quinoa, sorghum, rice or corn are allowed. You **do not** need to follow a 100% gluten free diet as it is the fructans (carbohydrate) not the gluten (protein) that triggers the symptoms. Foods that contain small amounts of fructans such as oatmeal, cornflakes, rice crisps, soy sauce are allowed.
- Limit foods that are okay to one serving at each meal or snack with no more than 1 to 2 servings a day of allowed fruit and 1 ½ to 3 servings a day allowed vegetables. This will slow down the break down and absorption of the food.
- Avoid foods that list sorbitol and other sugar alcohols. Most of them end with “ol” (lactitol, mannitol, xylitol, maltitol, isomalt). Since these sweeteners are low in calories you can usually find them in a low of “diet” or “sugar free” products such as chewing gum, candies or mints.
- Talk to your pharmacist if you are taking liquid medications, such as syrup or cough medicine, as sorbitol may be an ingredient.

This chart may help you with serving sizes:

Imperial and Metric Sizes		
1 cup	=	250 ml
¾ cup	=	175 ml
½ cup	=	125 ml
¼ cup	=	60 ml
1 tablespoon (Tbsp)	=	15 ml
1 teaspoon (tsp)	=	5 ml
1 ounce (oz)	=	25 grams (g)

Meal suggestions

Breakfast:

- cereal, such as Corn Flakes, Rice Krispies or oatmeal with lactose free milk or almond or rice milk and blueberries or sliced bananas
- smoothie made with lactose free yogurt, lactose free milk and strawberries
- egg omelette made with spinach, bell peppers and cheddar cheese
- gluten free toast with peanut butter
- gluten free waffles/pancakes with blueberries and pure maple syrup

Lunch:

- corn or rice pasta with chicken, tomatoes, bell peppers and herbs
- gluten free sandwich with filling (canned salmon, sliced turkey, cheese), lettuce, tomato and mayonnaise
- homemade soup with allowed vegetables and rice crackers
- green salad with dressing (olive oil, lemon juice) and canned tuna
- corn tortilla wrap with chicken, lettuce, tomato, olives and feta

Dinner:

- beef stew with carrots, potatoes and celery
- baked fish with quinoa and carrots
- stir fry chicken with bok choy, carrots, bean sprouts served over brown rice
- gluten free pizza with cherry tomatoes, basil, ham, pineapple and mozzarella cheese

Snacks:

- rice crackers with cheddar cheese or peanut butter
- ½ cup chopped pineapple or honeydew melon or small orange
- small banana with 1 Tbsp peanut butter
- berry crumble (made with blueberries/raspberries and topped with oatmeal crumble)
- popcorn