

# **Your child's diet with Dietary Fructose Intolerance (DFI)**

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## **What is Dietary Fructose Intolerance (DFI)?**

Dietary Fructose Intolerance is when your child has problems digesting and absorbing the fructose in foods he or she eats. DFI is not a disease but is a common condition. Some children can absorb less fructose than others.

If the fructose is not absorbed, it travels to the large intestine. Natural bacteria live there. The bacteria eat the fructose and make gas and fluid. This causes the symptoms of DFI which include:

- bloating
- gas
- abdominal cramps
- diarrhea

## **Every child is different**

What your child feels may be different from another child. This handout will help you choose foods that will decrease, or get rid of, the symptoms. You and your child will become the experts on what your child can eat and enjoy. Most children grow out of DFI.

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## What causes DFI?

Eating large amounts of fructose is the main cause of DFI. Humans were never meant to eat a lot of fructose – our bodies cannot handle it. Fructose is now added to many food products so we are exposed to more fructose than ever.

There is a serious condition with a similar name called Hereditary Fructose Intolerance (HFI). Children with HFI need to stay away from all sources of fructose. DFI is not the same as HFI. Your child has DFI and can eat some fructose safely.

## What is fructose?

Fructose is a natural sugar found in most fruits and some vegetables. It is also added to many foods such as candy, juice, pop and snack foods. Other sugars you may see on food labels include:

- glucose
- sucrose
- lactose

Glucose is a very common sugar found in most foods, except meat. Sucrose is table sugar, the kind we use every day. Lactose is the sugar found in milk. Your child can eat these sugars.

## What foods have a lot of fructose?

The charts listed show foods that “may be tolerated” which have less fructose. Your child can enjoy these foods.

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## Fruits

Fruits that may be tolerated	Fruits to stay away from (high-fructose fruits)
<p>Try these fruits first. You may find that they will not cause any symptoms:</p> <ul style="list-style-type: none"> <li>● avocado*</li> <li>● bananas, ripe</li> <li>● blackberries</li> <li>● blueberries</li> <li>● boysenberries</li> <li>● clementine</li> <li>● cranberries</li> <li>● cantaloupe</li> <li>● grapefruit</li> <li>● honeydew melon</li> <li>● kiwi fruit</li> <li>● kumquat</li> <li>● lemon</li> <li>● lime</li> <li>● mandarin</li> <li>● orange</li> <li>● papaya</li> <li>● passion fruit</li> <li>● paw paw</li> <li>● pineapple</li> <li>● raspberries</li> <li>● rhubarb</li> <li>● star fruit (carambola)</li> <li>● strawberries</li> <li>● tamarillo</li> <li>● tangelo</li> </ul>	<p>These are more likely to cause symptoms:</p> <ul style="list-style-type: none"> <li>● apple, applesauce, apple juice, cider*</li> <li>● apricots*</li> <li>● cherries*</li> <li>● coconut milk and cream</li> <li>● dried fruit (raisins, figs)</li> <li>● fruit juice</li> <li>● guava</li> <li>● grapes</li> <li>● lychee*</li> <li>● mango</li> <li>● nashi fruit*</li> <li>● nectarine*</li> <li>● peach*</li> <li>● pears and pear juice*</li> <li>● persimmon</li> <li>● plums and prunes*</li> <li>● quince</li> <li>● watermelon</li> </ul> <p>* These fruits contain natural sugar alcohols and may cause symptoms.</p>

Serving size ½ cup (125 mL). Limit the intake of “Fruits that may be tolerated” to one serving at each meal (3 a day). Fresh or frozen may be better tolerated than canned fruit (as these are often packed in pear juice or heavy syrup). Avoid concentrated sources such as dried fruit and fruit juices.

## Vegetables

Vegetables that may be tolerated	Vegetables to stay away from (high-fructose vegetables)
<p>Try these vegetables first. You may find that they will not cause any symptoms:</p> <ul style="list-style-type: none"> <li>● alfalfa</li> <li>● bamboo shoots</li> <li>● bean sprouts</li> <li>● beans (green)</li> <li>● bok choy</li> <li>● cabbage*</li> <li>● carrot</li> <li>● cauliflower*</li> <li>● celery</li> <li>● chives</li> <li>● corn</li> <li>● cucumber*</li> <li>● eggplant</li> <li>● ginger</li> <li>● bell and hot peppers *</li> <li>● leafy greens (herbs, spinach, swiss chard)</li> <li>● lettuce</li> <li>● mushrooms*</li> <li>● parsnip</li> <li>● pumpkin</li> <li>● radish</li> <li>● scallions or spring onions (green part only)</li> <li>● squash, summer (zucchini)</li> <li>● squash, winter (butternut)</li> <li>● tomato</li> <li>● turnip</li> <li>● white and sweet potatoes</li> <li>● yam</li> </ul>	<p>These are more likely to cause symptoms:</p> <ul style="list-style-type: none"> <li>● artichoke (Jerusalem and Globe)</li> <li>● asparagus</li> <li>● beetroot</li> <li>● broccoli*</li> <li>● brussel sprouts*</li> <li>● burdock</li> <li>● chicory roots and greens</li> <li>● chutney</li> <li>● dandelion greens</li> <li>● fennel</li> <li>● garlic</li> <li>● leek</li> <li>● legumes (kidney beans, chick peas and lentils)*</li> <li>● okra</li> <li>● onion</li> <li>● peas</li> <li>● radicchio lettuce</li> <li>● relish</li> <li>● shallots</li> <li>● tomato sauce and paste</li> </ul> <p>* These vegetables can cause gas in most people.</p>

Serving size ½ cup (125 mL) for most vegetables or 1 cup (250 mL) for leafy green vegetables. Limit to 3 servings a day. Cooked vegetables may be better tolerated.

## Grains

Wheat has fructans in it. Fructans are made up of fructose. Fructans are poorly absorbed so some people have symptoms of DFI from eating food made with wheat. Inulin, fructo-oligosaccharides and oligofructose are sources of fructans that are sometimes added to foods such as yogurt, bread and pasta to increase the fibre content.

Your child might benefit from eating rye bread instead of wheat bread and wheat-free cereal, crackers and pasta. Please talk to your dietitian about making these changes.

Also, many breads have fructose added to them. Read the ingredients to see if the bread you use has fructose in it. Choose bread with no fructose most often.

## Other foods

Foods that may be tolerated	Foods to stay away from (high-fructose foods)
<p>Try these first. You may find that they will not cause any symptoms:</p> <ul style="list-style-type: none"> <li>● jam, jelly, and marmalade – made from fruits in the “Fruits that may be tolerated” on page 3</li> <li>● peanut butter</li> <li>● golden syrup</li> <li>● maple syrup</li> <li>● yeast extract spreads such as Marmite, Vegemite</li> <li>● glucose-sweetened energy/ sports drinks</li> <li>● glucose tablets, powder, syrup</li> <li>● sucrose (table sugar) – in moderation</li> <li>● sweeteners such as Equal, Sucralose, Aspartame, Stevia, Acesulfame K, cyclamate</li> </ul>	<p>These are more likely to cause symptoms:</p> <ul style="list-style-type: none"> <li>● honey</li> <li>● agave syrup</li> <li>● condiments (ketchup, relish), sauces (BBQ, sweet and sour, plum) containing glucose-fructose</li> <li>● sweet wines, port, sherry</li> <li>● desserts (ice cream, candy, cookies) sweetened with fructose or glucose-fructose</li> <li>● canned fruit in heavy syrup or fruit juice (usually pear)</li> <li>● sodas and other beverages containing glucose-fructose</li> <li>● chicory-based coffee substitute beverages</li> <li>● foods containing inulin or fructo-oligosaccharides such as some breads or yogurts</li> </ul>

Sources: USDA nutrient database. Shepherd Works [www.shepherdworks.com.au/](http://www.shepherdworks.com.au/)

## Reading labels

You will need to read the list of ingredients on a food label to see if the product has fructose. Ingredients on a food label are listed in order of their amount by weight.

The ingredient in the largest amount is listed first and the one in the smallest amount is listed last. A good rule is to check the first 4 ingredients to make sure the food product is not high in fructose.

In Canada, high fructose corn syrup is called “glucose-fructose” and is present in soft drinks, sports drinks, chocolate milk, condiments, breakfast bars, flavoured yogurts, jams and jellies.

Fructose may also appear on a label under another name. Avoid foods having these names listed in the first 4 ingredients:

- corn syrup solids
- fruit juice concentrate
- glucose-fructose
- high fructose corn syrup
- honey

## Sweeteners and “Sorbitol”

Sorbitol is a sweet tasting, low calorie sweetener. People with DFI should not eat sorbitol because it can cause gas, bloating, pain, and diarrhea, just like fructose does. Other products are similar to sorbitol and should be avoided – notice that most of them end with “ol”:

- erythritol
- isomalt
- lactitol
- maltitol
- mannitol
- xylitol

Since these sweeteners are low calorie, you can usually find them in a lot of “low fat” or “diet” or “sugar free” products. Read the ingredients and the Nutrition Facts table to see if the product has these ingredients.

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## When is it OK to include fructose?

Some people with DFI can increase the amount of fructose they eat after 2 months of following a fructose-reduced diet.

After 2 months, you can try adding high fructose foods to meals to see if your child feels any gas, bloating or diarrhea.

### Try following these steps:

1. Avoid fructose for 2 months.
2. After 2 months, try including high-fructose foods in small pieces. Eat these foods with a meal that has meat or a meat alternative like beans, tofu or nuts.
3. Watch for any gas, bloating or diarrhea for 4 hours after you eat the high-fructose food.
4. Write down the high-fructose foods you ate and if they caused problems or not.

## Checklist

- Eat small pieces of fruit and small servings of vegetables, instead of eating a lot at once.
  - If you are going to have some high-fructose fruits, candy, or pop, eat small amounts with a meal.
  - Read food labels.
  - Try to stay positive about food. Keep trying different foods and soon your child should have less symptoms.
  - After 2 months, try adding high-fructose foods with meals, and your child may not have problems with them.
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## **Dietitian's suggestions**

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