Understanding FODMAPs

What are FODMAPs?

FODMAPs are a group of small carbohydrate (sugar) molecules found in everyday foods. Carbohydrates are made up of carbon, hydrogen and oxygen and provide an important source of energy for the body. FODMAPs are carbohydrates that may be poorly absorbed in the small intestine of some people. FODMAPs move through the digestive tract to the large intestine (colon), where they can draw water into the colon and are rapidly fermented (digested) by naturally-occurring gut bacteria. The fermentation of FODMAPs produces gas and other by-products.

While some people are able to consume FODMAPs without experiencing gastrointestinal side effects, many people with digestive disorders, such as Irritable Bowel Syndrome (IBS), find that FODMAPs triggers symptoms including abdominal pain, cramping, bloating, excess gas, constipation and/or diarrhea.

What does FODMAP mean?

FODMAP is an acronym for Fermentable – Oligosaccharides – Disaccharides – Monosaccharides – And – Polyols. Each of these is explained below:

<table>
<thead>
<tr>
<th>F</th>
<th>Fermentable: Fermentable carbohydrates are sugars that are broken down and digested by bacteria in our intestines, producing gas and other by-products.</th>
</tr>
</thead>
</table>
| O | Oligosaccharides: Oligosaccharides are short chains of carbohydrate molecules linked together.  
  • Fructans (a chain of fructose molecules) and galacto-oligosaccharides (a chain of galactose molecules) are oligosaccharides that humans cannot break down and properly absorb in the small intestine. |
| D | Disaccharides: Disaccharides are two carbohydrate molecules linked together.  
  • Lactose, the sugar found in milk and dairy products, is a disaccharide composed of glucose and galactose. Lactose must be broken down by the digestive enzyme lactase before it can be absorbed in the small intestine. In people with lactose intolerance, the level of lactase enzyme is insufficient to properly digest lactose and lactose travels to the colon where fermentation occurs. |
| M | Monosaccharides: Monosaccharides are single carbohydrate molecules.  
  • Fructose, the sugar found in many fruits and some vegetables, is a monosaccharide and does not require any digestion before it is absorbed. When foods containing equal amounts of fructose and glucose are eaten, glucose helps fructose to be completely absorbed. However, when fructose is present in greater quantities than glucose, fructose absorption depends upon the activity of sugar transporters located in the intestinal wall. The ability to absorb excess fructose varies from person to person. In people with fructose malabsorption, the capacity of sugar transporters is limited and excess fructose travels to the colon where fermentation occurs. |
| A | And |
| P | Polyols: Polyols, or sugar alcohols, are a type of carbohydrate that humans can only partially digest and absorb in the small intestine.  
  • Polyols, such as sorbitol, mannitol, xylitol, maltitol and isomalt, mimic the sweetness of sucrose (table sugar), however, because their absorption is much slower, only a small amount of what is eaten is actually absorbed. Polyols are often used as low-calorie sweeteners in sugar-free and diet products. |
How do FODMAPs affect people with digestive disorders?

Although FODMAPs are not the cause of digestive disorders such as IBS, they can trigger gastrointestinal symptoms. When FODMAPs reach the colon, they draw fluid into the bowel and bacteria ferment the FODMAP molecules to produce hydrogen and methane gases. The liquid and gas distend (stretch) the intestine and signal nerves surrounding the digestive organs.

For many people with IBS, the nerves of the gut are unusually sensitive and even a small change in the intestinal volume can cause the nerve network to overreact and trigger IBS symptoms.

What foods contain FODMAPs?

FODMAPs are found in a wide variety of everyday foods including fruits, vegetables, legumes, milk products and sweetening agents. Each person has an individual threshold for tolerating FODMAPs and some foods may pose more of a problem than others. A diet that reduces the intake of high FODMAP foods (shown in Table 1) and manages the total FODMAP load at each meal, may help to improve gastrointestinal symptoms for some people.

Table 1: HIGH FODMAP FOODS

<table>
<thead>
<tr>
<th>FRUCTANS</th>
<th>GALACTO-OLIGOSACCHARIDES</th>
<th>LACTOSE</th>
<th>EXCESS FRUCTOSE</th>
<th>POLYOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>artichokes, asparagus, beetroot, chicory, dandelion leaves, garlic, leek, onions, onion and garlic salt or powders, radicchio lettuce, spring onions (white part)</td>
<td>Legumes</td>
<td>baked beans, bortolotti beans, kidney beans, chickpeas, lentils, soybeans, soy flour and some soy milk</td>
<td>Milk Products</td>
</tr>
<tr>
<td>Grains</td>
<td>barley, rye or wheat (in large amounts), fructooligosaccharides, inulin</td>
<td>Cheese</td>
<td>soft and unripened cheese (ricotta, cottage, cream, mascarpone)</td>
<td>Fruits</td>
</tr>
<tr>
<td>Nuts</td>
<td>cashews, pistachios</td>
<td>Alcohol</td>
<td>Rum</td>
<td>Sweeteners</td>
</tr>
</tbody>
</table>

High FODMAP foods can be replaced with choices from the low FODMAP foods list (shown in Table 2) to help maintain a nutritious and well-balanced diet.

Table 2: LOW FODMAP FOODS

<table>
<thead>
<tr>
<th>FRUCTANS</th>
<th>GALACTO-OLIGOSACCHARIDES</th>
<th>LACTOSE</th>
<th>EXCESS FRUCTOSE</th>
<th>POLYOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>bok choy, bean sprouts, bell peppers, butter lettuce, carrots, celery, chives, corn, eggplant, green beans, tomatoes, potatoes, spinach</td>
<td>Legumes</td>
<td>firm tofu</td>
<td>Milk Products</td>
</tr>
<tr>
<td>Garlic or onion-infused oil</td>
<td>Gluten-free* breads/cereals, rice and corn pasta, rice cakes, potato chips, tortilla chips</td>
<td>Cheese</td>
<td>certain cheeses such as cheddar, parmesan, swiss, mozzarella</td>
<td>Fruits</td>
</tr>
<tr>
<td>* Examine ingredients on gluten-free breads and cereals to ensure other FODMAPs such as honey and agave are not present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Does reducing FODMAP intake relieve digestive symptoms?

The low FODMAP diet, originally developed in Australia by dietitian, Dr. Sue Shepherd, and gastroenterologist, Dr. Peter Gibson, is increasingly recognized as an effective dietary treatment for IBS. An Australian study has shown that a low FODMAP diet may reduce gastrointestinal symptoms in 75% of IBS patients. The low FODMAP diet is intended for people with functional bowel disorders, such as IBS, and may provide no benefit for healthy individuals.

Who should follow a low FODMAP diet?

If you experience any of the symptoms commonly associated with IBS, consult your physician. In addition to other treatments your doctor may recommend, following a low FODMAP diet may be an effective strategy to ease the pain, gas and altered bowel patterns commonly experienced in IBS.

When reducing FODMAPs in the diet, it is important to replace restricted foods with nutritious alternatives and ensure that your diet is healthy and well-balanced. A re-introduction of FODMAP foods should be done gradually to help identify which FODMAPs can be tolerated over the long term.

The low FODMAP diet is best implemented under the supervision of a qualified health care professional, such as a registered dietitian. This diet is a new and evolving area of nutritional science. Additional research into the role of FODMAPs in IBS and the FODMAP content of specific foods is continually emerging. We encourage you to seek additional sources that are supported by recent scientific evidence.


Partnering for best health.

Working collaboratively with your health care professional will help you protect your body from digestive diseases and maximize your digestive health. When you report your health status completely, concisely and accurately, your physician can provide you with the best care and treatment plan. Be sure to stay informed on ways to maintain your health and well-being, track and record your symptoms, and write down questions and concerns to discuss at your next appointment.

Learning more about digestive health.

The Canadian Digestive Health Foundation provides information, tools and support to help you take control of your digestive health with confidence and optimism. Visit www.CDHF.ca to view on-line seminars, personal stories and helpful resources about digestive disorders including IBS, diarrhea and constipation.

Videos and presentations about IBS are available at: http://www.cdhf.ca/digestive-disorders/ibs-living.shtml

- Understanding Irritable Bowel Syndrome... Let's Talk
  This video features interviews and comments from physicians and patients

- More than Gas and Bloating. IBS – the Mind-Gut Connection
  This on-line seminar, presented by Dr. Stephen Vanner, provides an in-depth overview of IBS, symptoms, possible causes and suggested treatments.

- IBS with Dr. Adam Weizman
  This public presentation provides an overview of IBS.

Please note: The information contained in this fact sheet is not a substitute for medical care and the advice of your physician. There may be variations in treatment that your physician may recommend based on your individual facts and circumstances. Always consult with your physician when you have concerns about your health.

The CDHF is the foundation of the Canadian Association of Gastroenterology.
YES! I want to donate to the Canadian Digestive Health Foundation

Please accept my donation to support:

[ ] Canadian Digestive Health Foundation Programs as needed
[ ] Canadian Digestive Health Foundation Endowment Fund

My donation is:

[ ] Personal [ ] In honour of [ ] In memory of

_____________________________________________________ (person’s name)

[ ] Yes, please send notification of my gift to:

Full name: ________________________________________________
Email: ____________________________________________________
Mailing address: ___________________________________________
Personal message: __________________________________________
________________________________________________________________
________________________________________________________________

Donate by Cheque:

[ ] I have enclosed a cheque for $ _________
[ ] I have enclosed a blank cheque marked “VOID” and authorize
the Canadian Digestive Health Foundation to deduct $ _________
from my account on the 28th day of each month

Signature: ____________________________________________ Date: ___ / ___ / ____ (dd/mm/yy)

Donate by Credit Card:

I would like to make a donation using my credit card. Please charge my

[ ] VISA [ ] MasterCard
[ ] $ 100 [ ] $ 250 [ ] $ 500 [ ] $ 1000 [ ] Other $ _______.

I want to support the Canadian Digestive Health Foundation with
a monthly donation charged to my credit card on the 28th day of each month. My signature below is authorization for this transaction.

[ ] $ 250 [ ] $ 100 [ ] $ 75 [ ] Other $ _______ per month

Card #: _____________________________________________
CCV2 ___________________________________ Exp. _____ / _____ mm/yy

Signature: __________________________________________
Tel: (______) _______ – ____________________
Email: _____________________________________________
Address: ___________________________________________
City: ____________________ Prov: _____ PC: ____________

[ ] Please send me information about protecting and improving
my digestive health.

Over 20 million Canadians suffer from
digestive disorders every year. The Canadian
Digestive Health Foundation believes this is
unnecessary and unacceptable.

We reduce suffering and improve quality of
life by empowering Canadians with trusted,
up to date, science-based information about
digestive health and disease.

As the Foundation of the Canadian
Association of Gastroenterology, we work
directly with leading physicians, scientists,
and other health care professionals to help
you understand and take control of your
digestive health with confidence and optimism.

Through research and public education, we
aim to:

REDUCE
the incidence and prevalence of
digestive disorders

IMPROVE
understanding of digestive health issues

SUPPORT
those suffering from digestive
disorders

ENHANCE
quality of life for those living with
digestive disorders

Request for support
The Canadian Digestive Health Foundation
is a national charity governed by a volunteer
board of directors. We rely on donations from
the public and the generosity of our partners
to develop and deliver our programs. Please
consider including our Foundation as one of
your chosen charities.

Contact us/Donate to
Canadian Digestive Health Foundation
1500 Upper Middle Road, Unit 3,
PO Box 76059, Oakville, ON L6M 1G0
Tel and Fax: 905-829-3949
info@CDHF.ca
or donate on line at www.CDHF.ca.

www.CDHF.ca