

The Low FODMAP Diet

Patient Information Leaflet

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FODMAPs

Fermentable **O**ligo-saccharides, **D**i-saccharides, **M**ono-saccharides **A**nd **P**olyols (FODMAPs) are part of the carbohydrate family of nutrients. These are found naturally in certain foods, and are added to some processed foods.

Types of FODMAPs

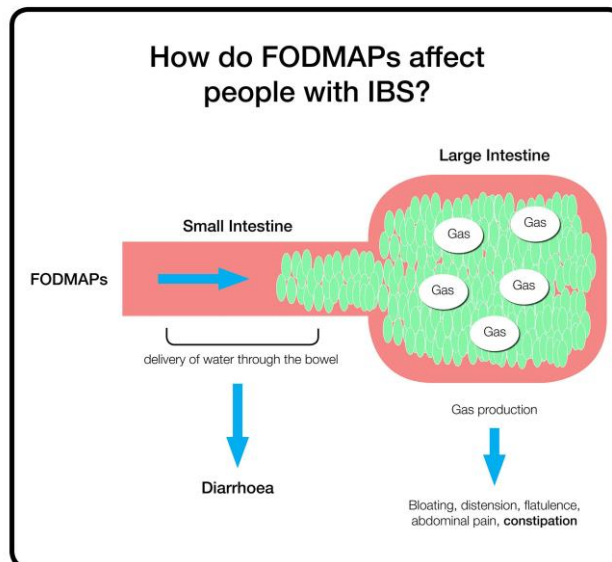
The below examples may be poorly absorbed in some individuals

- Fructose – mono-saccharide fruit sugar.
- Fructans – oligo-saccharide (chains) of fructose found in wheat, some fruit and vegetables and added to some foods.
- Galacto-oligosaccharides – oligo-saccharide, found in pulses.
- Polyols – Sorbitol and mannitol found in fresh foods.
- Lactose – di-saccharide found in milk.

FODMAPs and Irritable Bowel Syndrome (IBS)

FODMAPs may not be broken down in the small intestine, and are therefore not absorbed. The presence of these FODMAPs in the small intestine can increase the amount of fluid in the gut, which can increase symptoms of loose stools, altered bowel habits, pain and bloating.

In addition, when undigested FODMAPs pass in to the large intestine, they can be fermented by gut bacteria. This results in **gas production**. In people with IBS, increased gas production through fermentation of FODMAPs can result in bloating, flatulence and abdominal pain.



Low FODMAP diet

Research has found that diets low in FODMAPs can reduce symptoms such as bloating, diarrhoea and pain for a high proportion of people who have been diagnosed with IBS. It is important to remember, however, that diet is just one of the different factors that can influence symptoms of IBS.

The **Low FODMAP diet** is a three stage process;

Stage one is avoidance of all foods containing FODMAPs for a short, defined period of time, approximately four weeks. This should be followed as strictly as possible. If your bowel symptoms improve, this indicates you are likely to be sensitive to one or more of the FODMAPs you have excluded. As this stage is restrictive, it should not be followed for a long period of time. This diet sheet will help you to avoid FODMAPs strictly.

Stage two is the reintroduction phase. High FODMAP foods are reintroduced in a controlled way in order to identify which are tolerated and in what amounts.

Stage three is maintenance. Once you have identified which foods do (and importantly don't) trigger symptoms, the long term aim is to have a varied diet but keep foods that trigger symptoms to a minimum to allow you to control your symptoms.

Healthy eating

The aim of the FODMAP elimination diet is to help improve your symptoms of IBS. A low-FODMAP diet can also be healthy and well balanced. Include a variety of foods from the major food groups to make sure you don't miss out on any of the range of nutrients your body needs.

Starchy Carbohydrates include potatoes, bread, cereals, rice and pasta should make up about a third of the food you eat. Of these foods, wheat and wheat products are high in fructans and should be avoided.

	Foods high in FODMAPs (Avoid)	Suitable low-FODMAP alternatives
Breakfast cereals	<ul style="list-style-type: none"> Wheat-based and bran-based cereals, including muesli e.g. bran flakes, wheat biscuits 	<ul style="list-style-type: none"> Porridge Oat based cereals Rice Krispies Cornflakes
Bread and crackers	<ul style="list-style-type: none"> All white and brown wheat bread (pitta, naan, chapattis, sourdough, bagels) Wheat or rye crackers. 	<ul style="list-style-type: none"> Wheat free bread (most gluten free bread is suitable). Rice cakes Oat cakes Corn crackers
Meal accompaniments	<ul style="list-style-type: none"> Pasta (fresh and dry) Noodles (egg, udon, pot) Couscous Bulgar wheat Amaranth 	<ul style="list-style-type: none"> Wheat/gluten free pasta Buckwheat pasta Rice Rice noodles Potato Sweet potato Polenta Quinoa Buckwheat Pearl barley
Flours	<ul style="list-style-type: none"> Wheat flour Rye flour Gram flour 	<ul style="list-style-type: none"> Wheat-free flour Cornflour Rice Potato Buckwheat Tapioca flours

Snacks	<ul style="list-style-type: none"> • Wheat-flour pastries • Cakes • Biscuits • Wheat based savoury snacks e.g. pretzels, cheese biscuits • Liquorice. 	<ul style="list-style-type: none"> • Ready salted/salt & vinegar potato crisps; crisps made with maize e.g. tortilla chips – check no onion or garlic powder used in flavouring. • Wheat-free biscuits • Cakes and pastries made with suitable flours; oat flapjack.
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Protein Foods include meat, fish, poultry, eggs and vegetarian alternatives		
	Foods high in FODMAPs (Avoid)	Suitable low-FODMAP alternatives
Animal protein sources	<ul style="list-style-type: none"> • Breaded and battered products e.g. fish fingers, chicken nuggets, chicken kiev, battered fish etc. 	<ul style="list-style-type: none"> • Plain meat • Chicken • Fish • Eggs (without coating).
Non-animal protein sources	<ul style="list-style-type: none"> • Pulses such as beans • Chickpeas and lentils • Silken-style Tofu • Pistachio and cashew nuts 	<ul style="list-style-type: none"> • Tofu (water or brine packaged) • Tempeh • Textured vegetable protein (TVP – soya mince) • Quorn (check labels for high FODMAP ingredients such as onion). • Most nuts and seeds are tolerated in moderate amounts e.g. small handful raw or toasted nuts or seeds, small amount nut butters / tahini.

Dairy Foods

Lactose found within dairy foods can be broken down (digested) into simpler sugars which are absorbed readily and so don't provoke symptoms. Some people are able to digest lactose more efficiently than others. These people are less likely to experience symptoms related to foods high in lactose.

People who do not digest lactose efficiently can usually tolerate it in small amounts. All animal milks and most products made from them contain lactose. Such products listed in the 'high FODMAP' section below can be eaten/drunk in small amounts spread through the day.

Dairy products high in lactose (Avoid)

- Milk – full cream, semi-skimmed, skimmed, milk powder, buttermilk.
- Yoghurt, ice cream.
- Cottage cheese, soft cheeses, processed cheeses.
- Whey powder, milk powder, milk concentrate, milk solids. Check labels.

Suitable low-lactose alternatives

- Lactose free milk and yoghurt.
- Soya, rice or oat milk (preferably with added calcium, check these are not sweetened with apple juice, fructose or inulin).
- Hard cheeses (e.g. cheddar, parmesan),
- Butter, spreads and vegetable oils.

Vegetables

Foods high in FODMAPs (Avoid)

- Artichoke
- Asparagus
- Avocado
- Beetroot
- Broccoli
- Cabbage
- Cauliflower
- Brussel sprouts
- Butternut squash
- Garlic
- Leek
- Onion & Spring onion (White part)
- Peas & Sugar snap peas
- Mange tout
- Sweetcorn

Suitable low-FODMAP alternatives

- Aubergine
- Courgette
- Bamboo shoots
- Beansprouts
- Pak choi
- Water chestnuts
- White and red cabbage
- Kale
- Carrot
- Parsnip
- Turnip
- Swede
- Pumpkin
- Chives
- Spring onions (green part)

<ul style="list-style-type: none"> • Sugar snap peas • Mushroom • Beans and pulses. 	<ul style="list-style-type: none"> • Green beans • Cucumber • Lettuce • Radish • Celery • Spinach • Rocket • Peppers (all colours) • Olives • Tomato
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Fruit

Many suitable fruits contain fructose. Everyone can tolerate some fructose however people who absorb fructose less efficiently need to be careful to avoid eating large amounts at a time.

Portion sizes are given for these foods. Aim to eat three portions per day, spread through the day – **avoid eating more than one portion (80 grams) of suitable fruit at one time.**

Fruit juice should be limited to half a glass (100ml) of juice from suitable fruits.

Fruits (and their juices) high in FODMAPs (Avoid)	Suitable low-FODMAP alternatives
<ul style="list-style-type: none"> • Apple • Pear • Apricot • Nectarine • Peach • Blackberry • Cherry • Lychee • Mango • Plum/prune • Watermelon • Figs 	<ul style="list-style-type: none"> • Banana (green) • Citrus fruits (oranges, grapefruit, lemons) • Grapes • Kiwi fruit • Melon (honeydew, galia, cantaloupe) • Passion fruit • Papaya • Pineapple • Raspberries • Strawberries • Blueberries

- Dates
- Dried fruits

- Cranberries
- Rhubarb

Miscellaneous and labels

	Foods high in FODMAPs (Avoid)	Suitable low-FODMAP alternatives
Sugar and sweeteners	<ul style="list-style-type: none"> • Honey • Agave nectar <p>Polyols – these are typically used in sugar-free sweets, and include:</p> <ul style="list-style-type: none"> • Sorbitol, • Xylitol, • Mannitol, • Isomalt. <p>Fructose sweeteners may be added to some jams, yoghurts, cereals, sauces. Check for:</p> <ul style="list-style-type: none"> • Fructose • Fructose syrup • High fructose corn syrup 	<ul style="list-style-type: none"> • Sugar (sucrose) • Maple syrup • Golden syrup • Treacle <p>Most artificial sweeteners:</p> <ul style="list-style-type: none"> • Aspartame, • Acesulfame K (Canderel, Silver Spoon sweetener), • Saccharin (Sweetex, Hermesetas tablets), • Sucralose (Splenda) <p>Small amounts of suitable fruit jam or marmalade.</p>
Prebiotics/fibre	<p>High FODMAP ingredients are sometimes added to foods to add fibre or promote 'good' bacteria (prebiotics), check labels for:</p> <ul style="list-style-type: none"> • FOS • Inulin • Oligofructose 	<p>If you suffer with constipation, ensure adequate fluid intake and try adding 2 tablespoons of linseeds to breakfast cereals to increase fibre intake.</p>
Flavourings	<p>Onion and garlic ingredients (e.g. extract, powder, puree) should be avoided.</p> <p>Check stock cubes, gravy mixes, savoury sauce mixes and ready meals.</p> <p>The generic term 'flavourings' may involve unsuitable ingredients. When in doubt it is best to leave the item out while you are on an elimination diet.</p>	<p>Most herbs and spices are suitable, e.g.: asafoetida powder, basil, chilli, chives, cinnamon, coriander, ginger, lemon/lime juice, mustard, nutmeg, parsley, pepper, rosemary, salt, thyme, turmeric, vinegar (white/balsamic).</p> <p>For garlic flavouring, use commercial garlic-infused oil. For onion flavouring, sautee onions in oil, remove onions from pan and use oil for cooking meat/veg etc.</p>

Meal ideas

Breakfast

- Porridge/ cornflakes with low lactose milk
- Suitable fruit with low lactose yoghurt
- Wheat free toast with eggs, a grilled tomato, grilled bacon

Lunch

- Sandwich made with suitable bread and filled with cold meat / tinned fish / hard cheese / sliced hardboiled egg and some suitable salad vegetables e.g. lettuce, cucumber
- Cold wheat free pasta / rice / quinoa made into a salad with suitable vegetables e.g. small cubes of red pepper and cucumber, chopped lettuce, beansprouts, herbs and suitable dressing e.g. olive oil and vinegar / lemon juice or mayonnaise (check labels of salad dressings for onion or garlic)
- Baked potato with tuna mashed with a little mayonnaise and some herbs with suitable salad vegetables
- One portion suitable fruit e.g. an orange or about ten grapes. Low lactose yoghurt.

Main meal

- Meat/poultry/fish with suitable vegetables and boiled potatoes. Serve with suitable gravy/sauce – try lemon juice and herbs with fish/chicken, try using meat juices thickened with suitable flour with meat. You could add a little Marmite or Bovril to the gravy for extra flavour.
- Risotto – sauté the rice grains in garlic infused oil rather than using onions or garlic, use a homemade stock or the water from cooking vegetables rather than stock cubes as the cooking liquor. Add suitable vegetables and chicken / bacon / seafood as desired and finish with parmesan and herbs. Try adding some toasted walnuts.
- Wheat free pasta with a cheesy/white sauce e.g. macaroni cheese – use low lactose milk and hard cheese, thicken with cornflour. Flavour with chives and the green parts of spring onions. Serve with suitable salad vegetables.
- Wheat free pasta with a tomato based sauce e.g. bolognese – use one medium tomato worth of tomatoes and avoid adding extra tomato puree. Use plenty of herbs and permitted vegetables. Sauté the veg at the start in some garlic flavoured oil. Try sprinkling on some toasted pine nuts and sliced olives at the end.
- Stir fry – Use strips of meat or chicken and plenty of permitted vegetables such as strips of carrot, green beans, beansprouts, bamboo shoots, bok choy, and strips of red pepper. To add flavour try using ginger, deseeded, chopped chilli peppers (or use dried chilli or chilli powder), use a little garlic flavoured oil for frying and sprinkle with toasted sesame oil and toasted nuts or seeds at the end. Serve with rice or rice noodles.

Dessert

- One portion suitable fruit with one scoop ice cream (not more due to lactose content) or low lactose yoghurt or custard made with low lactose milk or rice/oat milk
- Meringue with suitable fruit and a small amount of live natural yoghurt or whipped cream
- Banana custard – make custard using low lactose milk, mash in half a small banana per portion, top with a few raspberries.

Snacks

- A few nuts
- Rice cakes topped with dark chocolate
- Plain rice cakes, oat cakes or corn crackers topped with sliced banana OR tomato / cucumber with tahini OR marmite
- Wheat-free biscuits
- Potato crisps (Salt & vinegar or ready salted)
- Popcorn
- One portion suitable fruit e.g. a medium orange, a handful of raspberries.

Acknowledgements

Leaflet produced with permission and thanks to the Gastroenterology Dietitians at The Royal Liverpool University Hospital

Who can I contact for more support?

Aintree University Hospital Dietitians:

Telephone: 0151 529 3473 (Monday to Friday 8am – 4pm)

Further information

Smartphone App:

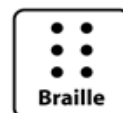
Food Maestro FODMAP (annual cost £3.99)

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