

DAIRY FREE IN THE MANAGEMENT OF IRRITABLE BOWEL SYNDROME



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Irritable bowel syndrome (IBS) is a functional bowel disorder defined as 'a chronic relapsing gastrointestinal problem, characterised by abdominal pain, bloating and changes in bowel habit' (1). Associated symptoms include diarrhoea, constipation, flatulence, urgency, passing mucus and a feeling of incomplete evacuation.

Rome III is the current diagnostic criteria used for IBS (Table 1) with sub classification of IBS by predominant stool consistency, e.g. IBS with constipation (IBS-C), IBS with diarrhoea (IBS-D), IBS mixed type (IBS-M) (1,2).

Table 1: Rome III Diagnostic Criteria* for IBS

Recurrent abdominal pain or discomfort† at least three days a month in the past three months, associated with two or more of the following:

- improvement with defecation;
- onset associated with a change in frequency of stool;
- onset associated with a change in form (appearance) of stool.

* Criteria fulfilled for the past three months with symptom onset of at least six months before diagnosis
† 'Discomfort' means an uncomfortable sensation not described as pain (1)

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IBS is thought to be a biopsychosocial disorder caused by a combination of factors such as genetics, altered motility and transit, psychosocial factors, diet, increased visceral sensation, inflammation and neurotransmitter imbalance (1,3). Patients often report that factors like stress, anxiety and a busy lifestyle may worsen symptoms further (4).

IBS is the most common functional gastrointestinal disorder in clinical practice with an estimated UK prevalence of 12 percent - women being twice as likely as men to have the condition (5,6). Around 50 percent of all IBS sufferers remain undiagnosed (1). IBS has a significant impact on quality of life with patients more likely to be absent from work and visit their general practitioner than the general population (7).

Most IBS sufferers believe that diet plays a key role and excluding certain foods helps to alleviate symptoms (4). Dairy and lactose are frequently pinpointed as a trigger for symptoms and up to 54 percent of IBS sufferers avoid milk products (4).

LACTOSE INTOLERANCE

Lactose, the disaccharide exclusively found in mammalian milk, requires hydrolysis by the enzyme lactase found in the small intestine. Lactose intolerance occurs when lactase is deficient or absent, resulting in undigested lactose entering the colon. The consequence of this is an increased influx of fluid and production of short-chain fatty acids, hydrogen, carbon dioxide and methane by the action of colonic flora (8). Lactose intolerance manifests itself as bloating, nausea, wind, abdominal pain, constipation and diarrhoea – symptoms not dissimilar to IBS (9).

There are three different forms of lactase deficiency; congenital, primary or secondary. Congenital lactase deficiency occurs at birth, is a life long condition with very low lactase levels, but is extremely rare. In primary lactase deficiency there is the relative absence of lactase and onset is slow as lactase activity gradually declines post weaning (9). It is the most common cause of lactose malabsorption estimated to afflict 70 percent of the world's population (10). The prevalence is highest amongst Hispanics (50 to 80 percent), Jews (60 to 80 percent) and Asians (nearly 100 percent) (11). Secondary lactase deficiency may develop when the brush border of the small intestine becomes damaged. It is usually temporary and develops secondarily to a gastrointestinal illness.

LACTOSE INTOLERANCE IN IBS SUFFERERS

It is estimated that lactose intolerance affects 24 percent of IBS sufferers (12). Whilst lactose intolerance does not lead to IBS, those with IBS may have increased visceral sensitivity to the fluid and gas build up in the colon caused by undigested lactose (8).

As the symptoms of lactose intolerance are similar to IBS and a range of other gastrointestinal

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Box 1 – Checking the ingredients list for lactose sources

All animal milks (cows', goats', ewes'/sheep), all types of cheese including cheese flavours/powders, hydrolysed milk proteins, butter, margarine (unless stated dairy free), buttermilk/oil, caseins, caseinates, creams and curds, whey, lactose, milk protein/solids, non-fat milk solids, rennet, all dairy creams, ice-cream (dairy and non-dairy), yoghurts/fromage frais.

Box 2 – Gastrointestinal symptoms of cows' milk protein allergy (19)

IgE- mediated <i>Infant and child specific – majority out-grow by five years of age. Anaphylactic reactions</i>	Non-IgE- Mediated <i>High adult self-reporting Difficult to diagnose Non-anaphylactic reactions</i>
<ul style="list-style-type: none"> • Angioedema of the lips, tongue and palate • Oral pruritus • Nausea • Colicky abdominal pain • Vomiting • Diarrhoea 	<ul style="list-style-type: none"> • Gastro-oesophageal reflux disease • Loose or frequent stools • Blood and/or mucus in stools • Infantile colic • Constipation • Abdominal pain • Perianal redness

conditions, it is imperative that a diagnosis is made carefully (13,14,15). A lactose hydrogen breath test is considered the best test due to reliability, cost and non-invasiveness by measuring the hydrogen breath concentration after ingestion of a 50g lactose load. If the test is not available or suitable for a patient, a trial period of lactose exclusion is recommended, followed by a re-challenge (13).

MANAGEMENT OF AN IBS PATIENT WITH SUSPECTED LACTOSE INTOLERANCE

General considerations

UK guidelines have been developed for the dietary management of IBS by National Institute of Clinical Excellence (NICE) and the British Dietetic Association (BDA) but there is little guidance on lactose intolerance in IBS patients (13,15). Patient assessment should include a full medical history (including investigations such as coeliac disease), anthropometry, family history, medication, symptom evaluation and identifying the predominant IBS symptom profile, e.g. IBS-D (13).

Dietary assessment

NICE (2008) indicates that IBS patients, where diet is a major factor in symptoms, should be referred to a dietitian (15). A diet history should be taken and nutritional adequacy assessed as self-directed exclusion diets commonly compromise nutrient intakes (13). Patients should ideally keep a food and symptom diary prior to the appointment.

Exclusion Diet

Patients with a positive lactose hydrogen breath test, or where milk is believed to aggravate IBS symptoms, should be advised to follow a strict lactose-free diet for four weeks avoiding all traces of lactose (8,9,13). Suitable lactose free alternatives should also be clearly indicated (see Table 2).

There are many hidden sources of lactose and patients will need guidance on reading and understanding food labels (See box 1). Pharmaceutical grade lactose

should not cause any symptoms of lactose intolerance or need to be avoided unless a patient is on multiple medications or reports symptoms when taking their medication (14). With a wide range of dairy and lactose free alternatives now on the market, exclusion diets are easier and more practical to follow. Plant-based milk, yoghurt, dessert and spread alternatives based on soya, almond, hazelnut, rice, oat and hemp are now readily available in supermarkets.

REINTRODUCTION TO TOLERANCE

Following lactose exclusion for four weeks, lactose should be gradually reintroduced to confirm lactose intolerance and/or establish an individual's lactose tolerance threshold (13). Most patients with lactose intolerance can tolerate up to 12.5g of lactose (250ml milk) without symptoms (17,18). Some patients can tolerate cheese and yoghurt well (9).

OTHER DIETARY EXCLUSIONS

Lactose intolerance may be confused with non-IgE mediated cows' milk protein allergy, an immune response to the proteins found in milk, as gastrointestinal symptoms are similar (see Box 2) (13,19). If an allergy is confirmed, complete avoidance of all dairy products is essential and the patient should consult a dietitian with appropriate competencies about nutritional adequacies (19).

Restriction of other fermentable carbohydrates may also be beneficial in the treatment of IBS. Seventy-four percent of patients who followed a diet low in fermentable oligosaccharides, disaccharides (including lactose), monosaccharides and polyols (FODMAPs) reported an improvement in abdominal symptoms (20).

NUTRITIONAL ADEQUACY

In the UK, dairy is a major source of calcium, vitamin A (full cream milk) and vitamin B12 (14). Patients should be advised to choose milk alternatives that are fortified with calcium and vitamins. In the main, plant-based milk and yoghurt alternatives are now fortified with calcium and vitamin B12 to similar levels as found in dairy and many are also fortified with vitamin D. Therefore, when advising patients on suitable alternatives it is important to get them to check the nutrition panels on pack. Other non-dairy sources of calcium are sardines with bones, almonds, calcium-fortified fruit juices, baked beans, tofu and white bread. Calcium supplementation should be assessed if the patient's intake of calcium rich foods is low (8).

CONCLUSION

A quarter of IBS patients may suffer from lactose intolerance and careful dietary management with the help of a dietitian will ensure nutritional adequacy and unnecessary food restrictions. A lactose breath test may be useful if available, but diagnosis is dependent on a lactose exclusion diet followed by a lactose challenge. Patients may need support reading food labels and their diets should be assessed for nutritional adequacy. There are many lactose-free milk alternatives available in the UK fortified with calcium and vitamins and patients should be encouraged to choose these.

For further practical and helpful information:
 • King's College FODMAPs Team www.kcl.ac.uk/medicine/research/divisions/dns/projects/fodmaps/index.aspx
 • IBS Network: www.theibsnetwork.org
 • New dairy free website: www.alpro.com/uk/lactose-dairy-free

For article references please email: info@networkhealthgroup.co.uk



Concerned about FODMAPs™?

Try adding something structurally and functionally different

FODMAPs is an acronym that stands for Fermentable Oligo-, Di- and Mono-saccharides, and Polyols.

This term was coined by a group of Australian researchers¹, who theorise that foods that contain these forms of carbohydrate exacerbate the symptoms of functional gastrointestinal disorders, particularly Irritable Bowel Syndrome (IBS), where fermentation of these carbohydrates, by gut bacteria, may produce symptoms such as wind and bloating.

FODMAPs usually include oligosaccharides with a beta-fructosidic and alpha-galactosidic linkage.

In contrast, Bimuno-GOS is a mixture of oligosaccharides with beta-glucosidic and beta-galactosidic linkages. Moreover, it is highly selective towards bifidobacteria, which do not produce gas during their fermentation.

Bifidobacteria are one of the most important bacteria groups in the gut. They specifically stimulate the immune system and enhance

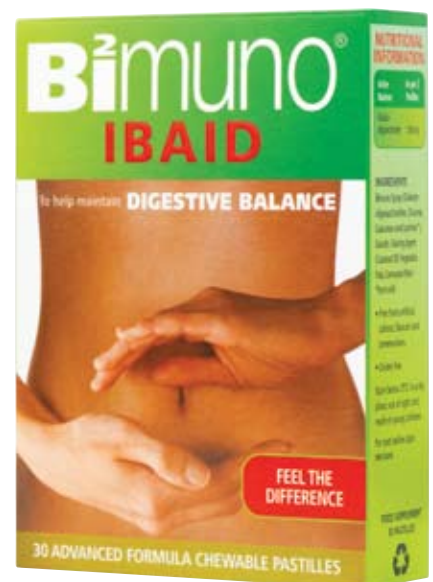
overall gut health² and have been linked to increased resistance to infection³. Moreover, IBS sufferers generally have lower levels of bifidobacteria⁴.

A low FODMAP diet has been linked to a significant decrease in bifidobacteria in IBS patients⁵.

Studies have shown that Bimuno-GOS has a unique dual action in providing nutritional support specifically for bifidobacteria so that their numbers and activity is significantly increased within 7 days⁶.

A placebo-controlled, randomized, double-blind, parallel study on the effect on microbiota and symptoms of IBS⁷, showed significant differences between Bimuno-GOS and placebo in abdominal pain, bloating, flatulence and quality of life assessment. Moreover, Bimuno-GOS significantly increased bifidobacteria.

In conclusion, Healthcare Professionals may wish to consider adding Bimuno-GOS to their recommended low FODMAP diet.



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Table 2 - Lactose content of common foods (16)

COMMON LACTOSE SOURCES	Lactose		DAIRY & LACTOSE FREE ALTERNATIVES	
	g/100g	g/serve		
DAIRY MILKS				
		200ml serve		
Goats'	4.4	8.8	<ul style="list-style-type: none"> • Calcium fortified plant-milk alternatives: soya, almond, hazelnut, rice, oat, hemp, chufa, pea 	
Cows' milk – full-cream, semi, skimmed	4.7-5.0	9.4-10.0		
Buttermilk	5	10.0		
Sheep	5.1	10.2		
Evaporated milk	8.5-10.3	4.3-5.2 - <i>per 50g serve</i>		
Condensed milk	12.3	6.2 - <i>per 50g serve</i>		
Dried milk powder	39	7.8 - <i>20g made up to 200ml</i>		
DAIRY BUTTER				
		20g serve		
Butter	0.6	0.12	<ul style="list-style-type: none"> • Pure vegetable spreads • Oils 	
DAIRY CREAM				
		60g serve		
Double	1.7	1.0	<ul style="list-style-type: none"> • Soya or coconut single cream alternative • Soya simply plain yoghurt alternative in place of sour cream 	
Crème fraiche	2.1	1.3		
Single	2.2	1.3		
Soured cream	3.8	2.3		
Artificial cream	2.3-6.8	1.4-4.1		
DAIRY CHEESES				
		30g serve		
Brie / Camembert / Mozzarella / Danish blue /Roquefort / Edam / Gouda / Emmental / Gruyere /Cream cheeses	Trace	Trace	<ul style="list-style-type: none"> • Soya or pea cheese - check the label as some soya cheeses may contain lactose 	
Cheddar, Stilton, Wensleydale, Red Leicester, Caerphilly	0.1	0.03		
Double Gloucester	0.4	0.1		
Goats' cheese/Parmesan	0.9	0.3		
Feta	1.4	0.4		
Ricotta	2	0.6		
Cottage cheese	3.1	3.9 - <i>125g serve</i>		
Processed cheese	5.0	1.5		
YOGHURTS/FROMAGE FRAIS				
		125g pot		
Goats' milk yoghurt	1.3	1.6	<ul style="list-style-type: none"> • Soya yoghurt alternatives – plain, fruit or vanilla • Soya pouring yoghurt alternatives – vanilla or plain 	
Fromage frais - fruit	3.0	3.8		
Fromage frais - plain	4.0	5.0		
Yoghurt - fruit - low-fat	4.4	5.5		
Yoghurt - plain - low-fat/diet	4.6	5.8		
DESSERTS/BISCUITS/CHOCOLATE				
Cheesecake	0.3	0.4 - <i>125g</i>	<ul style="list-style-type: none"> • Soya custard, soya desserts (vanilla, chocolate, caramel) • Milky puddings made with plant-based milk alternatives • Dairy free ice-creams • Jellies • Plain chocolate suitable for vegans • Home made biscuits and cakes using dairy alternatives • Most plain biscuits 	
Custard	4.6-5.3	5.8-6.6 - <i>125g</i>		
Milk puddings	5.2	6.5 - <i>125g</i>		
Chocolate mousse	5.7	3.7 - <i>65g</i>		
Ice-cream - dairy - flavoured	4.7	5.6 - <i>2x60g scoops</i>		
Ice-cream - dairy - vanilla	4.8-5.2	1.2-6.2 - <i>2x60g scoops</i>		
Ice-cream - non-dairy - vanilla	4.8	5.8 - <i>2x60g scoops</i>		
Chocolate covered ice-cream bar	4.9	3.9 - <i>80g scoops</i>		
Ice-cream - non-dairy - flavoured	6.5	7.8 - <i>2x60g scoops</i>		
Digestive plain/gingernuts/rich tea type biscuit	0	0		
Choc chip cookie	Trace	Trace		
Wafer filled biscuit	0.4	<0.1 - <i>2 wafers</i>		
Chocolate digestive	2.2	0.8 - <i>2 biscuits</i>		
Danish pastry	0.6	0.7 - <i>1 medium</i>		
Chocolate chip muffin	1.2	1.0 - <i>1 medium</i>		
Chocolate bar - plain	0.2	0.1 - <i>50g</i>		
Mars type bar	6.6	4.3 - <i>1 medium</i>		
Kit-Kat type bar - small	7.6	1.7 - <i>2-finger bar</i>		
Chocolate bar - milk	10.4	5.6 - <i>54g bar</i>		



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Questions relating to: *Dairy free in the management of irritable bowel syndrome.*
 Type your answers below and then **print for your records**. Alternatively print and complete answers by hand.

Q.1	What is IBS and what are the causes?
A	
Q.2	What are the symptoms of IBS?
A	
Q.3	Describe the Rome III Diagnostic criteria for IBS.
A	
Q.4	What can trigger the symptoms of IBS?
A	
Q.5	How would you test for lactose intolerance?
A	
Q.6	What are the lactose tolerance levels of patients who suffer from this disorder?
A	
Q.7	What other dietary exclusions are there in the management of IBS?
A	
Q.8	Give examples of non-dairy foods that are a good source of calcium.
A	
Please type extra notes here . . .	