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# *Low FODMAP Prebiotics*

Discover some **well-tolerated, low FODMAP, prebiotic fibres** that may help manage gut symptoms.

PECTIN • RESISTANT STARCH • BETA-GLUCAN

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## Finding well-tolerated dietary interventions to support IBS patients' microbiomes could reduce the risk of IBS and manage flare-ups.

### The low FODMAP diet helps control gut symptoms

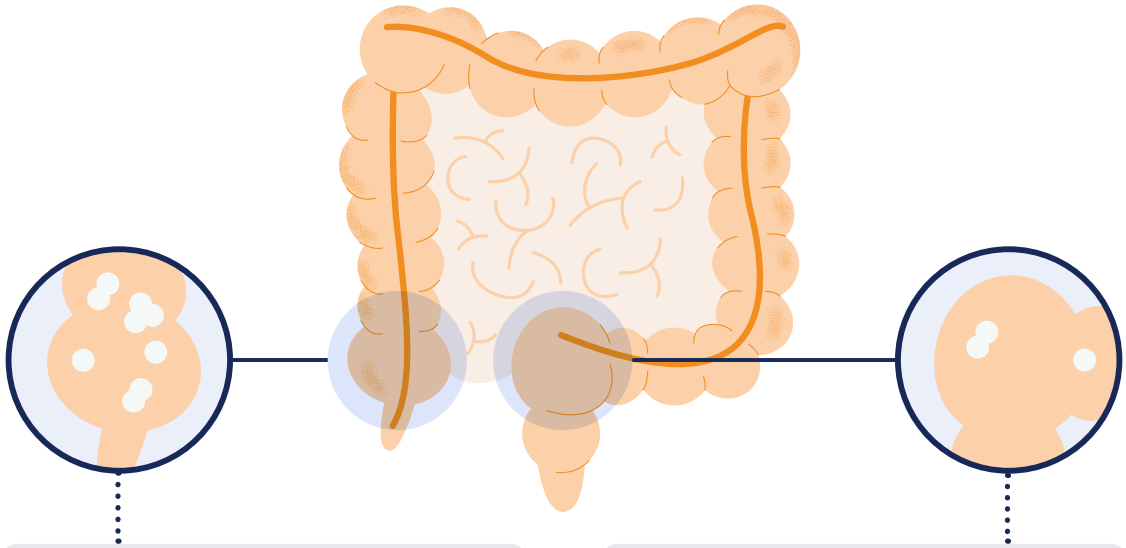
The low FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides and polyols) diet restricts rapidly fermented prebiotic fibres and has been shown to achieve symptom response in up to 70% of patients with IBS.[1] A low FODMAP diet is also sometimes recommended for the management of small intestinal bacterial overgrowth (SIBO).[2]

The low FODMAP diet involves the initial restriction of all FODMAPs followed by a challenge stage in which each individual FODMAP is reintroduced to assess tolerance. Once the tolerance to each individual FODMAP has been assessed the diet can be individualised to manage symptoms while avoiding excessive dietary restriction.

### Complex, slowly fermented prebiotic fibres are well tolerated

Although some patients with gut discomfort may need to limit their intake of certain FODMAPs to manage their symptoms long term, it is important to ensure their diet contains adequate amounts of prebiotic fibres to support optimal gut health. The consumption of complex, soluble and more slowly fermentable, fibres has been shown to have a role in helping to control IBS symptoms.[3]

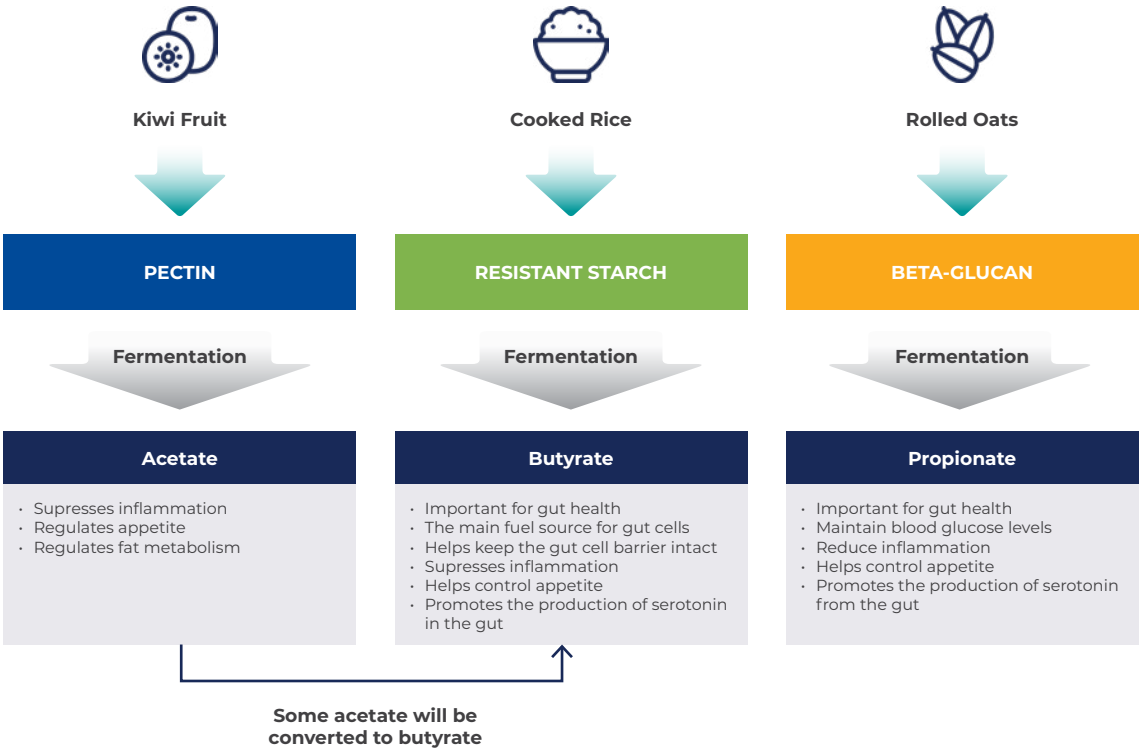
### Fibre Fermentation in the Colon



FODMAPs are rapidly fermented which can cause discomfort in some individuals

Resistant starches and pectins are more slowly fermented, along the entire length of the colon, leading to less gas and discomfort

## Metabolism of Prebiotics




## Pectin to promote acetate production

If your patient's microbiome has a low potential to produce acetate, evidence suggests that the prebiotic fibre pectin promotes acetate production.[7, 8] If your patient is sensitive to FODMAPs a list of low FODMAP pectin fruit sources is provided in Table 1.

## Beta-glucan to promote propionate production

To support patients with a low potential to produce propionate evidence suggests that the prebiotic fibre beta-glucan, found in oats and barley promotes propionate production.[4, 5]

**If your patient has FODMAP sensitive IBS, ½ cup (52g) of rolled oats is considered low FODMAP.[6]**

## Resistant starch to promote butyrate production

While resistant starch is the prebiotic fibre most recommended to increase microbial butyrate production,[9, 10] it is thought to result in gut symptoms in some IBS patients.[11] A list of low FODMAP sources of resistant starch is provided in Table 2 to trial with your patient.

## Testing reveals microbiome targeted prebiotic intervention

Testing your patients with *Insight*™ can allow you to understand whether they have a high or low potential for short-chain fatty acid production, allowing you to make personalised dietary recommendations for targeted microbiome interventions.

## Pectin is a prebiotic fibre which is well tolerated in patients with IBS[3]

2–3 servings/day of low FODMAP fruits or 5–10 g/day fruit fibre may help to reduce IBS risk or prevent IBS flare-up.

Allow 2–3 hours between each fruit serving to avoid over-loading the gastrointestinal system and to confirm the effectiveness of any specific fruit.[3]

**Table 1: High pectin and low FODMAP foods[6, 19]**

| Food Source | FODMAP serve | Pectin/ serve |
|---|---|---|
| **VEGETABLES** | | |
| Kale, fresh, cooked | ½ cup, chopped (75g) | 1.04 |
| Endive, fresh | 7 leaves (75g) | 0.90 |
| Parsnip, fresh, cooked | 1 medium (75g) | 0.87 |
| Collard greens, frozen, cooked | 1 cup, chopped (75g) | 0.79 |
| Carrot, canned, cooked, or raw | 1 medium (75g) | 0.64 |
| Broccoli, cooked or raw or frozen | ¾ cup heads only (75g) | 0.63 |
| Rutabaga/Swede, fresh, cooked | 1 cup diced (75g) | 0.62 |
| Brussels sprout, frozen, cooked | 2 sprouts (50g) | 0.58 |
| Eggplant, fresh, cooked | 1 cup (75g) | 0.47 |
| Beans, green, or yellow wax, canned, cooked, or raw | 15 beans (75g) | 0.46 |
| Cabbage, green or red, raw | ¾ cup (75g) | 0.43 |
| Swiss chard, fresh, cooked | 1 cup, chopped (75g) | 0.43 |
| Okra, frozen, cooked | 7½ pods (75g) | 0.41 |
| Kohlrabi, fresh, cooked | ½ cup, chopped (75g) | 0.37 |
| Bok choy, fresh, cooked | 1 cup (75g) | 0.35 |
| Rhubarb, fresh, cooked | 1 cup, chopped (150g) | 0.33 |
| Radish, red or white, fresh | 4 radish (75g) | 0.30 |
| **FRUITS** | | |
| Papaya, fresh | 1 cup, chopped (140g) | 1.00 |
| Orange, fresh, Florida, navel, Temple, Valencia | 1 medium (130g) | 0.89 |
| Mandarin, fresh | 2 small, peeled (125g) | 0.89 |
| Kiwi fruit | 2 small, peeled (150g) | 0.59 |
| Grapefruit, fresh, with membrane | 1/3 cup (80g) | 0.56 |
| Banana | 1 medium (112g) | 0.49 |
| Avocado | 1/8 whole avocado (30g) | 0.35 |
| Olives, black or green with pimento | 15 small olives (60g) | 0.30 |
| Rockmelon, fresh | ¾ cup (120g) | 0.30 |
| **NUTS** | | |
| Peanut butter, crunchy | 2 tablespoons (50g) | 0.47 |
| Peanuts | 32 nuts (28g) | 0.40 |

## Resistant starch can result in gut symptoms in some patients with IBS

Trialing small amounts of low FODMAP high resistant starch sources can help assess whether your patient can tolerate resistant starch in their diet.

It has been estimated that Australians currently consume between 4-14g of resistant starch daily,[12] which may not be sufficient to obtain maximum benefit.[13]

**Table 2: High resistant starch and low FODMAP foods[6, 14-18]**

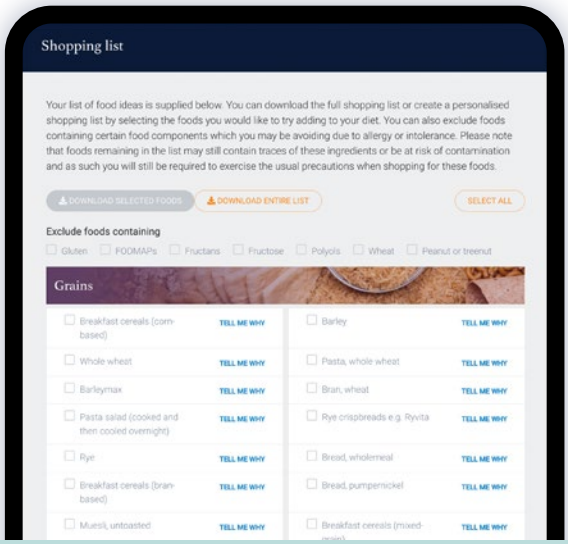
| Food Source | FODMAP serve | RS/ serve |
|---|---|---|
| Sorghum, flour | 1 cup (100g) | 36.1 |
| Buckwheat, flour | 2/3 cup (100g) | 8.6 |
| Banana, slightly green | 1 medium (100g) | 8.5 |
| Plantain, raw | 145g | 7.4 |
| Oats, rolled, raw | 1/2 cup (65g) | 5.5 |
| Millet, cooked | 1.5 cup (276g) | 2.8 |
| Polenta, cooked | 1 cup (255g) | 2.0 |
| **RICE, LONG GRAIN** | | |
| Rice, long grain, stir fried then chilled | 1 cup (190g) | 8.6 |
| Rice, long grain, steamed, stir fried | 1 cup (190g) | 4.2 |
| Rice, long grain, steamed, boiled or pressure cooked | 1 cup (190g) | 2.7 |
| **RICE, SHORT GRAIN** | | |
| Rice, short grain, stir fried then chilled | 1 cup (190g) | 7.0 |
| Rice, short grain, steamed, stir fried | 1 cup (190g) | 2.7 |
| **POTATO, RED** | | |
| Potato, red, cooked, chilled then reheated | 1 medium (150g) | 4.8 |
| Potato, red, cooked then chilled | 1 medium (150g) | 3.0 |
| Potato, red, boiled, baked or microwaved | 1 medium (150g) | 2.6 |
| **POTATO, WHITE** | | |
| Potato, white , cooked, chilled then reheated | 1 medium (150g) | 7.7 |
| Potato, white, cooked then chilled | 1 medium (150g) | 3.8 |
| Potato, white, boiled, baked or microwaved | 1 medium (150g) | 2.1 |

N.B. The information on the RS content of foods is collated from International published data may not reflect the food composition of Australian foods. Please note resistant starch content can vary considerably depending on the final temperature of the food product and cooking method.

Quantifying resistant starch content in food is difficult as it is influenced by the temperature of food at consumption, ripeness (for bananas and root vegetables), cooking method/s, storage temperatures and time stored.[17]

# *Insight*™ can help you provide personalised prebiotic recommendations

The *Insight*™ report provides a shopping list of dietary suggestions based on the abundance of 24 beneficial species of bacteria. The shopping list can be filtered by individual FODMAPs (fructans, fructose and polyols) and allergens (gluten, wheat, peanut and tree nuts) for further personalisation.





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