### Health benefits of prebiotics

- Improve mineral absorption
- Modulate immune system
- Modulate satiety
- Improve bowel habits
- Reduce occasional constipation, diarrhea
- Promote metabolic health (insulin resistance, healthy blood lipid levels)
- Help with symptoms of irritable bowel syndrome
- Reduce risk of allergy

#### Health benefits of whole food fibers

- Laxation
- Improve mineral absorption
- Improve blood lipids
- Improve blood glucose regulation
- Reduce occasional constipation, diarrhea
- Promote metabolic health (insulin resistance, healthy blood lipid levels)
- Help with symptoms of irritable bowel syndrome
- Reduce risk of allergy

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### Prebiotics

- Not digested by humans, but selectively utilized by gut microbes
- Naturally present in many whole grains, fruits, vegetables and legumes
- Adequate Intake values specified: Daily Value of 28 g/d based on 2000 kcal/d diet
- Can be soluble or insoluble

#### Prebiotics

- **Fiber prebiotics**: Inulin, fructo-oligosaccharides (FOS), and galacto-oligosaccharides (GOS). Promising candidates are resistant starch, polydextrose, xyl-o-oligosaccharide (XOS) and isomalto-oligosaccharide (IMO).

#### Non-fiber prebiotics

- Lactulose, promising candidates Polyphenolics, and polyunsaturated fatty acids

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### Whole food fibers

- Black beans have 15 g fiber per cup

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### For more information

- Visit ISAPPscience.org/prebiotics
- Follow us on Twitter @ISAPPscience

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**Understanding Prebiotics and Fiber**

Both prebiotics and fiber are dietary tools to promote health.

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**What is a prebiotic?**

In simple terms, a prebiotic is food for beneficial members of your resident microbial community – we can't digest prebiotics, but certain beneficial microbes can. Your resident microbes can produce a variety of beneficial compounds (for example, short chain fatty acids) from utilization of prebiotics. These can promote a healthy gut – and beyond. In more technical terms, a prebiotic is a substance that is selectively utilized by host microorganisms conferring a health benefit.

**What is fiber?**

Fibers are non-digestible plant-derived carbohydrates comprising at least 3 units of individual sugars. Most fibers are components of plants. Depending on regulations where you live, if fiber is isolated from whole plants or synthesized from sugars, demonstration of physiological benefits is needed to be able to call them 'fiber' on a food label.

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**Prebiotics are selectively utilized by resident microbes.**

Prebiotics have targeted effects on our bacteria. Most microbes won’t be affected. Selective utilization is a requirement for a prebiotic. Prebiotics encourage the activities of a subset of your microbiota that have beneficial functions, including those commonly used as probiotics (*Lactobacillus* and *Bifidobacterium*). Many fibers are likely also selectively utilized by gut microbes, but this is not a requirement for fiber.

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**Insoluble**

- e.g. Cellulose

**Soluble**

- e.g. Psyllium

**Fiber prebiotics**

- Inulin, fructo-oligosaccharides (FOS), and galacto-oligosaccharides (GOS).
- Promising candidates are resistant starch, polydextrose, xyl-o-oligosaccharide (XOS) and isomalto-oligosaccharide (IMO).

**Prebiotics**

- Not digested by humans, but acted on by gut microbes
- Naturally present in a wide range of foods from plants (e.g. chicory root, vegetables, whole grains). Usually isolated from whole plants or synthesized from sugars
- Adequate Intake level or Daily Value
- Many current prebiotics are a type of soluble dietary fiber

**Degree of microbiome modulation**

- Some microbiome modulation
- Proven microbiome modulation associated with health benefits

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An apple has 4.5 g fiber

Black beans have 15 g fiber per cup

Broccoli has 4 g fiber

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**Fiber vs. Prebiotics**

- Fiber is naturally present in a wide variety of plant foods.
- Prebiotics are dietary substances that are selectively used by resident gut microbes, leading to various health benefits.

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**Fiber Prebiotics**

- e.g. Cellulose
- e.g. Psyllium

**Non-fiber Prebiotics**

- Lactulose, promising candidates Polyphenolics, and polyunsaturated fatty acids

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**An apple has 4.5 g fiber**

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