

NUTRIENTS

Fibre

Non-starch polysaccharides and dietary fibre

The links between certain sugars in complex carbohydrates cannot be broken down by the human digestive system. These carbohydrates pass almost unchanged into the large intestine (colon), where it is partially fermented by good bacteria in the colon. These carbohydrates are called dietary fibre and are mainly derived from the cell walls of plants. The fact that dietary fibre is broken down in the large gut to provide energy and other substances for metabolism is the reason why fibre and non-digestible starch should not be described as "unavailable carbohydrates".

Food sources:

Compounds that are classified as fibre are primarily obtained from plant-based foods. Good sources of dietary fibre include whole grains, legumes, vegetables, nuts and seeds, and fruits. Fibre supplements are also available to increase the intake of dietary fibre; however, most experts recommend that fibre should be obtained through the consumption of foods, because this form allows consumption of many micronutrients and bioactive compounds contained in high fibre foods, which provide their own nutritional benefits.

There are various types of fibre, some of which are almost completely fermented by gut bacteria, whereas others are less fermentable. These less fermentable fibres are present for example in cereal grains including wheat, rye, barley and oats and bind water, increasing faecal bulk, and reducing transit time. These fibres can be helpful in reducing constipation. Fermentable fibres are present in fruits, vegetables, nuts and oats and provide fuel for bacteria, which may encourage a healthy microflora in the gut. Some fermentable fibres, such as beta glucan, in oats have other health benefits including helping to maintain healthy cholesterol levels and moderating blood glucose levels.

Different Types of Fibre

Fibre Component	Description	Food sources
Cellulose	Polysaccharides comprising up to 10 000 closely packed glucose units arranged linearly.	Grains, vegetables, fruit, nuts, cereal bran.
Hemicellulose	Polysaccharides containing sugars other than glucose.	Cereal grains, vegetables, fruit, legumes (for example: peas, beans, chick peas, lentils) and nuts.
Lignin	A non-carbohydrate component associated with plant walls.	Foods with a woody component, for example, celery and the outer layers of cereal grains.
Beta-glucans	Glucose polymers that (unlike cellulose) have a branched structure	Mainly found in cell wall of oats and barley.
Pectins	A non-starch polysaccharide common to all cell walls.	Fruits and vegetables, legumes, nuts and potatoes.
Gums and mucilages	Non-starch polysaccharides which are thick gel-forming fibres that help hold plant cell walls together.	Gums: seeds and seaweed extracts; Mucilages: psyllium seeds. Gums and mucilages are used as gelling agents,

		thickeners, stabilisers and emulsifying agents.
Resistant starch	Starch and the products of starch digestion that are not absorbed by the small intestine.	Legumes, potatoes, cereal grains
Oligosaccharides	Short chain carbohydrates of 3-9 monomers. These include fructo-oligosaccharides and galacto-oligosaccharides.	Onions, chicory, Jerusalem artichokes
Micro components (waxes, cutin and suberin)	Micro components of the plant structures.	Cereal grains

Dietary Fibre intake recommendations for adults range from 18–38 g/d. Variety is one of the important concepts of healthy diets. Just as a balanced diet incorporates adequate amounts of each vitamin and avoids excesses of any one kind, an optimal diet should incorporate the right amount and balance of fibre different types needed to perform dietary fibre's many functions. A varied diet that uses fibre-enriched foods together with fibre-rich foods has multiple benefits.

For further, personalized and more detailed information, please contact a dietitian registered with the Health Professions Council of South Africa. *References from the scientific literature used to compile this document are available on request.*

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