Dietary Fiber

Mini Review

Dietary Fiber consists of the remnants of edible plant cells, polysaccharides, lignin and associated substances resistant to (hydrolysis) digestion by the alimentary enzymes of humans. This definition defines a macro-constituent of foods which includes cellulose, hemicellulose, lignin, gums, modified celluloses, mucilages, oligosaccharides, and pectins and associated minor substances such as waxes, cutin, and suberin.

Constituents of dietary fiber

Non-Starch Polysaccharides and Resistant Oligosaccharides
- Cellulose
- Hemicellulose
- Arabinoxylans
- Arabinogalactans
- Polyfructoses
- Inulin
- Oligofructans
- Galactooligosaccharides
- Gums
- Mucilages
- Pectins

Analogous Carbohydrates
- Indigestible Dextrins
- Resistant Maltodextrins (from corn and other sources)
- Resistant Potato Dextrins
- Synthesized Carbohydrate Compounds
- Polydextrose
- Methyl cellulose
- Hydroxypropylmethyl Cellulose
- Indigestible (“resistant”) Starches

Lignin
- Substances Associated with the Non-Starch Polysaccharide and Lignin Complex in Plants
- Waxes
- Phytate
- Cutin
- Saponins
- Suberin
- Tannins

Sources of dietary fibre

Dietary fibre is found in fruits (pears, strawberries, blackberries, raspberries, currents, and oranges), vegetable (Brussels sprouts, artichoke, onion, garlic, corn, peas, green beans, broccoli), pulses (lentils, chickpeas, beans) and wholegrains (all bran and oat bran cereals, whole and mixed grain breads).

Advantages of dietary fibers

Bowel function: Dietary fibre, particularly insoluble fibre, helps prevent constipation by increasing stool weight and decreasing gut transit time. This effect is enhanced if fibre intake is paralleled by an increase in water intake.

The short chain fatty acids, produced when fibre is fermented by gut bacteria, are an important source of energy for colon cells and might inhibit growth and proliferation of gut tumour cells.

By improving bowel function, dietary fibre can reduce the risk of diseases and disorders such as diverticular disease or haemorrhoids, and may also have a protective effect on colon cancer.
Blood glucose levels: Soluble fibre, may slow digestion and absorption of carbohydrates and hence lower the rise in blood glucose that follows a meal (postprandial) and insulin response. This can help people with diabetes improve control their blood glucose levels.

Blood cholesterol: Results of epidemiological studies identify another role for dietary fibre in the prevention of coronary heart disease (CHD) that of improving blood lipid profiles. Clinical trials confirm the results of these epidemiological studies. Isolated viscous fibres such as pectin, rice bran or oat bran lower both total serum cholesterol and low density lipoprotein (LDL or bad) cholesterol levels. At the same time, research continues to show that diets high in a mix of dietary fibre also protect against CHD.

Other: While prevention of constipation, improved blood glucose levels, and blood lipid profiles predominate as beneficial outcomes of a diet high in dietary fibre, other benefits are worth noting. For example, because fibre provides bulk in the diet, without added calories, it can have a satiating effect on appetite; helping in weight management.

In order to have all the benefits of fibre it is important to vary the sources of fibre in the diet. Diets with fruits, vegetables, lentils/beans and wholegrains not only provide dietary fibre but as well many other nutrients and food components essential to good health.

Red Yeast Rice may be considered in people with elevated plasma LDL Colestrol at an early stage in pre Disease stage above statins. At an earlier stage before the age of 40 yrs.