Analyses & Recherche
NUTRINOV

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MEASUREMENT OF DIETARY FIBERS

Dietary fibers consist in :
Carbohydrate polymers (DP≥3) of plant origin, which may or may not be associated in plant with lignin or other non carbohydrate components (polyphenols, waxes, saponins, cutin, phytates, phytosterols …).
Or **processed carbohydrate polymers** (by physical, enzymatic or chemical means - eg oligofructose) or **synthetic polymers (DP≥3)** (eg FOS, modified cellulose and starch, Polydextrose, synthetic resistant starches).

Bacterial and animal products are not considered as dietary fibers.

Dietary fiber is neither digested nor absorbed in the small intestine. It has at least one of the following properties :
- Increases stools production (without diarrhea)
- Stimulates colonic fermentation
- Reduces pre-prandial cholesterol levels
- Reduces post-prandial blood glucose and/or insulin levels

Dietary fiber content in some foods

Foods	Gram content for a 100 g serving
Dry fig	11,0
Dry apricot	8,6
Bean - dry grapes	6,5
Garden beans	6,0
Walnut - Dry banana	5,5
Celeriac	5,0
Maize	4,0
Leek - Dandelion	3,5
French bean - Broccoli - Carrot	3,0
Spinach - Fresh date	2,7

Methods for total dietary fiber assay:

The most commonly used in the world :
The AOAC method 985.29 *(Method 991.43 allows to assay separately soluble and insoluble dietary fibre).*

Principle: food samples are subjected to sequential enzymatic digestion (α-amylase, protease and amyloglucosidase), treated with ethanol to precipitate soluble fibre and remove protein and glucose. The residue is washed, dried and weighted (the duplicate is used to determinate protein and ash contents).

For some products, supplementary analyses are essentials for compounds not assayed by AOAC method :
- Inulin and FOS : AOAC method 997.08
- Polydextrose: AOAC method 2000.11
- Resistant starch: AOAC method 2002.02, retrograded starch (RS3) being determinated by AOAC method.

Other methods to assay total dietary fibers :
NSP method (Non starch polysaccharides)**,** not contaminated by resistant starch but requires heavy equipment.
UTDF method (Upsala Total Dietary Fibre), a variation of the NSP method.