VIA FOOD

INFO4FOOD

- Innovating First | A Catalyst for new discoveries -

COLAB 4FOOD

Dietary fibre: an overlooked nutrient

Dietary fibre - an evolving definition: Initially focused on insoluble plant materials, the definition of dietary fibre (DF) has evolved to include a variety of carbohydrate polymers, reflecting advances in food science and a deeper understanding of their diverse health benefits. Analytical methods have also evolved to ensure accurate measurement, classification, and regulatory clarity.

1st quantification methodology: **Prosky (AOAC 985.29)**

ANCIENT GREECE:
"Whole grains help prevent constipation."

1953 — **First definition of dietary fibre**

1976 — **Physiological definition**

1985

1995 — **Inclusion of OLIGOSACCHARIDES in the definition**

2008 — **Final Codex Definition** *(CCNFSD; ALINORM 09/32/26)*

Dietary fibre consists of carbohydrate polymers with a degree of polymerization of at least three, which are not digested or absorbed in the small intestine. It includes naturally occurring edible polymers, those derived from raw food materials by physical, enzymatic, or chemical methods, and synthetic polymers.

CODEX ALIMENTARIUS INTERNATIONAL FOOD STANDARDS — Food and Agriculture Organization of the United Nations — World Health Organization

Classification of dietary fibre:

Solubility *Viscosity* *Fermentability*

Soluble (SDF)	↑ viscous	↑ fermentability

e.g.: pectin, inulin, β-glucan, guar gum (galactomannan)

Insoluble (IDF)	non-viscous	↓ fermentability

e.g.: cellulose, xyloglucan, resistant starch type 5

NOTE: This correlation is not absolute, but it applies to most cases. There are exceptions such as psyllium fibre which is insoluble, viscous and fermentable.

The dietary fibre different structures, combined with their physicochemical characteristics, influence their diverse functional and health properties in the gut.

While insoluble DF primarily increases stool bulk and improves bowel function, **soluble** and **fermentable** DF are reported to **have the most significant health-related effects**. **Prebiotics** are an important type of fermentable SDF that selectively **stimulate the growth and activity of beneficial gut bacteria**, thereby supporting digestive function and health.

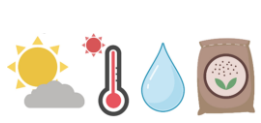
Main dietary fibre sources:

30-35% Cereals, Grains Nuts & Seeds

15-30% Fruits & Vegetables

10-15% Pulses

Dietary fibres diversity depends on:



GROWTH CONDITIONS — CULTIVAR & CONTENTS — RIPENESS — HEAT & PROCESSING

Health benefits of dietary fibres are diverse:

Improve bowel function
Prevent constipation

Increase of satiety
Weight management

Blood sugar regulation

Reduction of seric cholesterol

Strengthening of the immune system

Prevention of cardiovascular diseases

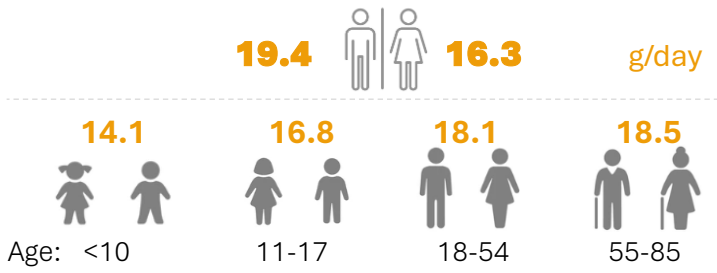
Prevention of certain cancers

Improve of brain function
- The gut-brain axis

Authorised nutritional and health claims: **Regulation (EC) 1924/2006**

Bridging the dietary fibre gap:

Dietary fibre is essential for health but is often overlooked. In Portugal, the average fibre intake is **17.8 g/day, below** the **recommended 25-30 g/day**. This "**dietary fibre gap**" is a public health concern and presents both a **challenge and an opportunity for the food industry and authorities**. Through food reformulation and innovation based on the modulation of carbohydrate structures to fulfil dietary fibre properties, both the **quantity and quality of fibre intake can be improved**, helping to bridge the gap.



Average DF consumption (g/day) in Portugal (IAN-AF 2015-2016).

PRR Plano de Recuperação e Resiliência — REPÚBLICA PORTUGUESA — Financiado pela União Europeia NextGenerationEU