

# Functional foods, organic foods, foods based on genetically modified organisms, food additives, food supplements

## Functional foods

- Functional foods are foods that, in addition to their basic nutritional value, also have a demonstrable **beneficial effect on human health** when consumed over a long period of time. <sup>[1]</sup>

*Example: strengthening immunity, slowing down the signs of aging, speeding up recovery, disease prevention.*

- Functional foods can be natural foods without modifications.
  - We obtain functional foods from conventional foods by adding biologically active substances or removing undesirable components (allergens).
  - A higher content of the desired substance can be achieved by breeding.

*Examples of functional foods: fermented milk products, broccoli, citrus fruits, grapes, tomatoes, green and black tea with antioxidant content, products with increased fiber content, vegetable butters and margarines with polyunsaturated fatty acids and phytosterols...*

- Some foods for special nutrition can also be included in this group.

 For more information see *Functional foods*.

## Organic food

- Also called *bioproducts*, *ecoproducts*.
- They are foods produced by controlled procedures from raw materials on **ecologically managed land** with low contamination.
- Produced in smaller quantities in areas without intensive agriculture with lower immission fallout.
- The products tend to have *higher values of some vitamins, minerals, fiber* and *lower values of the main nutrients* (proteins, fats, carbohydrates).
- Organic food is several times more expensive than conventional food, the yields of alternative agriculture tend to be low.
- Organic food is **subject to special legislative regulations**.
- They are marked with a special logo.
- Standards are not set for the content of contaminating substances, but it tends to be lower.
- The content of micro-organisms and natural toxic substances tends to be higher, therefore the same control of health safety as for conventional foods is needed.

 For more information see *Organic food*.

## Foods based on genetically modified organisms

- Act 153/2000 Coll. defines a **genetically modified organism** (GMO) as an organism (other than a human) whose **hereditary material has been altered by genetic modification** (targeted change) in a way that is not achieved naturally (crossbreeding, breeding). The definition applies to organisms capable of reproduction: microorganisms, plants, animals, cell cultures, **excluding man**.<sup>[1]</sup>
- The introduction, removal or silencing of genes using genetic engineering methods, regardless of the degree of kinship of the donor and the recipient.

*Examples of the goals of genetic modification: resistance to harmful insects, tolerance to herbicides, changing the spectrum of storage substances.*

- Each individual GMO **needs a permit** before being put into practice, which is preceded by detailed testing.
- On the European market, there are mainly products from GM soy, corn, and rapeseed. The first GMOs began to be grown commercially in the 1990s in the USA.
- GMOs are unlikely to pose a risk to human health. Concerns are related to allergies, toxicity, nutritional value, indirect harm to humans through GMO-fed animals.

 For more information see *Genetically modified foods*.

## Additives

- Also called *additives*, they are used to increase the quality of food during its production, packaging, transportation or storage.

- **Preservatives** and **antioxidants** extend the shelf life of food.
- **Colours, aromatics** and **artificial sweeteners** modify sensory properties (colour, taste).
- **Thickeners** and **emulsifiers** adjust the consistency of the product.
- **Enzymes** are used to modify and speed up technological processes.
- The use of each additive is preceded by a "toxicological examination" incl. examination of potential carcinogenicity and "approval procedure".
- All permitted additives are listed in the list of additives and their maximum content in food is limited by the directive of the Ministry of Health.
- The presence of additives must be indicated on the product by stating the name of the substance or in the form of an **E-number code**

*Example: E101: riboflavin, E110: yellow orange S, E211: sodium benzoate, E296: malic acid, E300: ascorbic acid, E322: soy lecithin...*

 For more information see Additives.

## Nutritional supplements

- Act 110/1997 Coll.§2 defines food supplements as nutritional factors (vitamins, mineral substances, amino acids, specific fatty acids and other substances) with a significant biological effect.<sup>[1]</sup>
- They are intended for intake in small measured quantities (capsules, tablets, dragees, drops...)
- They serve to supplement nutrients, they do not compensate for improper nutrition.

 For more information see Nutritional supplements.

## Links

### Used literature

- KUDLOVÁ, Eva. *Hygienu výživy a nutriční epidemiologie*. 1. edition. Karolinum, 2009. 287 pp. pp. 82-85. ISBN 978-80-246-1735-0.
- PERLÍN, Ctibor. *Zvláštní výživa* [online]. [cit. 2012-03-11]. <<https://el.lf1.cuni.cz/p24462415/>>.

### References

1. KUDLOVÁ, Eva. *Hygienu výživy a nutriční epidemiologie*. 1. edition. Praha : Karolinum, 2009. 287 pp. pp. 82-85. ISBN 978-80-246-1735-0.