

## **Functional Foods Challenges: Obesity as a Paradigmatic Example**

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### **ABSTRACT**

The basic concepts of nutrition are undergoing a significant change. The traditional idea of an “adequate diet”, in the mere sense of providing enough nutrients to ensure the survival of an individual, to satisfy metabolic needs and to pleasantly gratify the sensation of hunger is tending to be replaced by “optimum nutrition”, making more emphasis on the potential of foods to promote health, improve well-being and reduce the risk of illnesses. However, we are as yet ignorant of many aspects concerning food components, their effects and interactions and, therefore, their possible functional aspects. Genome and post-genome functional knowledge will be increasingly decisive in understanding the functions of genes, biomolecules and cells and their repercussion in the whole organism.

Among the immediate challenges in the near future are the scientific and technological developments and regulatory measures for the so-called “functional foods”, which can positively affect health and well being of consumers. Obesity and related disorders, whose genetic and molecular basis are increasingly understood, are now foreseen as key targets for novel functional foods developments, and offers a paradigmatic example of the complexity of a biological system as a target to be controlled.

Obesity can develop as a consequence of genetic or acquired changes in different types of biochemical processes that bring about an increase in energy intake, which, in the long run, exceeds energy expenditure. The alarming rise in obesity in developed societies cannot be conceived as the result of sudden genome changes, although it is true that the detail of the environmental factors responsible for this is not known, except the general idea that they are associated to new lifestyles, in particular to new ways of feeding and, probably, to unknown nutrients and/or food components.