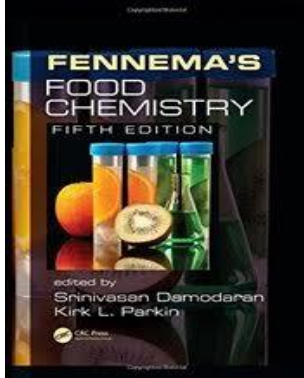


Food Chemistry I

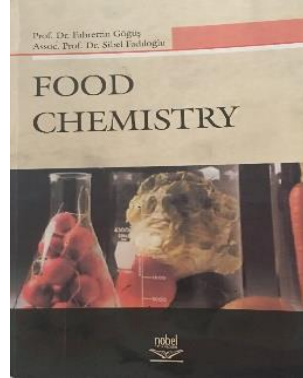


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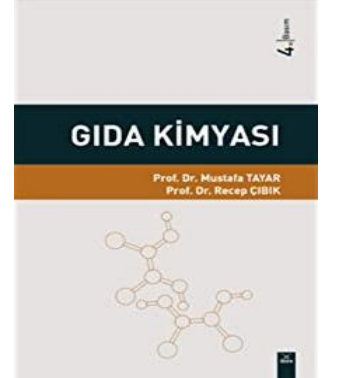
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1. Fennema O.R., Ed: Damodaran S. and Parkin K.L. 2017. *Fennema's Food Chemistry*, CRC Press Taylor & Francis Group Boca Raton, FL, USA.
2. Göğüş F. and Fadıloğlu S. 2006. *Food Chemistry*, Nobel Akademik Yayıncılık, Ankara.
3. Tayar M. ve Çıbık R. 2013. *Gıda Kimyası*, Dora Basın-Yayın Dağıtım Ltd. Şti., Bursa.

Food Chemistry and its importance:
Classification of food components
Terms and Definitions

Food science is a branch of biological science and an interdisciplinary subject involving primarily microbiology, chemistry, biology, and engineering.

Food science deals with the physical, chemical, and biological properties of foods as they relate to stability, cost, quality, processing, safety, nutritive value, wholesomeness, and convenience.

Food Chemistry is a comprehensive discipline and partially overlaps with chemistry, biochemistry, physical chemistry, botany, zoology, food nutrition, food safety, polymer chemistry, environmental chemistry, toxicology, molecular biology, and many other subjects.

Food Chemistry associates the most closely with chemistry and biochemistry and it is the extension of the two subjects to the food area. However, the subjects have different contents and focuses.

The chemistry subject deals mainly with the composition, property, and reactions of molecules, biochemistry focuses on the reactions and changes of various components in organisms under suitable or moderately suitable conditions, while food chemistry is interested in the changes of components occurred in such unsuitable conditions as freezing, heating, and drying, their interactions during these processes, and the effects of these changes on the nutrition, safety, and sensory properties (such as color, flavor, taste, and shape) of foods.

* The purpose of *Food Chemistry* is to elucidate the structure, physical and chemical properties, nutritional value as well as safety of these components, their changes undergone during storage and processing, and the effects of these changes on food nutrition and palatability.

* The knowledge is of great importance in improving food quality, developing new food resources, evolving food processing and storage technologies, upgrading food packaging materials, and increasing food safety and quality.

An analytical approach to food chemistry includes four components:

- (1) determining those properties that are important characteristics of safe, high-quality foods;
- (2) determining those chemical and biochemical reactions that have important influences on loss of quality and/or wholesomeness of foods;
- (3) integrating the first two points so that one understands how the key chemical and biochemical reactions influence quality and safety;
- (4) applying this understanding to various situations encountered during formulation, processing, and storage of food.

Safety is the first requisite of any food. This means a food must be free of any harmful chemical or microbial contaminant at the time of its consumption.

Food chemists are typically concerned with identifying the molecular determinants of material properties and chemical reactivity of food matrices and how this understanding is effectively applied to improve formulation, processing, and storage stability of foods. An ultimate objective is to determine cause-and-effect and structure–function relationships among different classes of chemical components. The facts derived from the study of one food or model system can be applied to our understanding of other food products.

Food is what we eat, but not everything we eat is food. The explanation of this lies in the fact that food has a function-to keep us alive-and unless what we eat contributes to this function in some way, it should not strictly count as a food.

We can define the food as the substances which, when eaten and absorbed by the body, *produce energy*, *promote the growth* and *repair of tissues* or *regulate these processes*. The chemical components of food which perform these functions are called nutrients and it follows that no substance can be called a food unless it contains at least one nutrient.