
BOOK REVIEW

Christos S. Mantzoros, editor

Nutrition and Metabolism: Underlying Mechanisms and Clinical Consequences

Humana Press ·C/O Springer Science + Business Media: Secaucus, NJ, 2009. XX + 428 pages.
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The editor of the book is Christos Mantzoros, an Associated Professor of Medicine at Harvard Medical School and an Associate Professor in Environmental Health at the Harvard School of Public Health. He serves as the Clinical Research Overseer of the division of Endocrinology, Diabetes and Metabolism at Beth Israel Deaconess Medical Centre and the Joslin Diabetes Centre. He conducts research on obesity and diabetes/metabolic diseases, as reflected in the presented book, *Nutrition and Metabolism*.

This book, written by 29 co-authors, with 423 pages, consists of five basic segments, i) defining the scope of obesity and the metabolic syndrome problem, ii) their genetics and pathophysiology, iii) public health perspective related to obesity, iv) nutritional recommendations, and v) clinical assessment and management of obesity. The appendix of the book recapitulates methods for classifying, diagnosing, and monitoring of obesity and diabetes mellitus type 2.

In the first section “Nutrition and Metabolic Syndrome: A Twenty-First Century Epidemic of Obesity and Eating Disorders” Prof. Mantzoros explains that excessive caloric intake leading to obesity and to metabolic syndrome in adults and especially children and adolescents is becoming more and more prevalent in affluent western societies. This phenomenon has resulted in increased prevalence of type 2 diabetes among adolescents and is expected to shift the age for diagnosis of obesity and associated co-morbidities, including cardiovascular diseases and cancers to a younger age-group. The author warns that the potential financial, psychological, and public health implications of these changes are enormous and have not yet been fully appreciated. If the current trends continue it is expected that by the year 2020 more than 50% of Americans will be obese, possibly making obesity the norm and leanness the exception.

In the second section attention is paid to the genetics and pathophysiology of obesity.

The discussion is focused on how genes, alone and in combination with the environment, can give rise to obesity and metabolic syndrome. Monogenic, syndrome (mendelian) and polygenic

obesity as well as metabolic syndrome and type 2 diabetes phenotypes according to their genetic traits are described, together recent knowledge obtained from candidate gene analyses in particular and from genome wide linkage scan approach methodology.

The pathophysiology of obesity is explained in chapters describing environmental inputs, intake of nutrients and endogenous molecules contributing to the regulation of energy homeostasis, as central integration of environmental and endogenous signals and regulation of food intake and energy expenditure.

New research findings in the area of energy regulation are summarised, starting from the original classical hypotheses proposing metabolite sensing, through peripheral tissue-brain interactions, and coming full circle to the recently discovered pathways regulating energy homeostasis. Inputs important for the regulation of energy homeostasis such as i) metabolic, ii) endocrine, iii) neural, and iv) exogenous, environmental signals and environmental inputs represented by orosensory properties of food and emotional eating are described in detail. The fact that obesity rates have been gradually increasing is related to a rapidly changing so-called obesitogenic environment and associated lifestyle changes, especially characterised by a sedentary lifestyle and diet.

Explanation of the role of particular nutrients in the diet such as dietary fats, fatty acids, carbohydrates in regulation of energy homeostasis as well as the role of hormones from adipose tissue, the gastrointestinal tract, and the pancreas for the regulation of food intake and energy balance comprise the core of this chapter. Information is presented on factors and molecules involved in the pathophysiology of metabolic syndrome and particularly the role of adipokines, free fatty acids and inflammatory markers; dysfunctional adipose tissue is considered by the authors as the “condition sine qua non” for the development of metabolic syndrome.

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The third section of the book addresses public health perspectives, especially targeting childhood obesity through lifestyle modification, prevention of obesity in the population as associated with physical activity and diet. The nutritional recommendations in the form of food guide pyramids and the 2005 My Pyramid are discussed by J. Farnognoli et al. in the light of results of ecological, case-control, and cohort studies and clinical trials. A restrained attitude towards recommending a diet low in fat and high in complex carbohydrates and USDA Food Guide Pyramid recommendation is expressed in the chapter "Nutrition Recommendations for the General Population, Where is the Science?", written by W.C. Willet and M.J. Stampfer. The authors advocate weight control and physical activity and their own food pyramid based on whole grains, polyunsaturated fatty acids, an abundance of fruit and vegetables, healthy sources of protein, moderate alcohol consumption, limitation of refined starches, sugar and red meat and exclusion of trans-fatty acids.

In section four a medical diet therapy is specified for patients with cardiovascular diseases and diabetes types 1 and 2, based on the Mediterranean and DASH diets approach. The clinical part of the book considers diagnosis, evaluation and medical management of obesity and diabetes, hypertension and hyperlipidemia from lifestyle modification and pharmacological treatment to surgical management. The appendix of the book recapitulates methods for classifying, diagnosing and monitoring of obesity and type 2 diabetes.

The authors of the book *Metabolism and Nutrition* have collected recent findings in the area of obesity and metabolic syndrome especially in terms of pathophysiology, prevention and treatment. It is undoubtedly worth reading the work for the wealth of information concerning this contemporary and most significant health problem, despite many of the presented facts being debatable and in need of explicit understanding.

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