

Acta

Biomedical Engineering

**NUTRACEUTICS,
BIOMEDICAL REMEDIES
AND PHYSIOTHERAPEUTIC METHODS
FOR PREVENTION OF
CIVILIZATION-RELATED DISEASES**

Editors: Halina Podbielska, Tadeusz Trziszka



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In memoriam

Prof. Dr. Gerhard Müller Prof. h.c Dr. h.c. mult., one of the pioneers of Biomedical Optics and Laser Medicine Research and expert of Biomedical Technologies, big Friend of Poland and the Societas Humboldtiana Polonorum, cooperating extensively with scientists from Wrocław University of Technology and Wrocław University of Environmental and Life Sciences, passed away 19 August 2010 in Berlin after a prolonged illness.

NUTRACEUTICS, BIOMEDICAL REMEDIES AND PHYSIOTHERAPEUTIC METHODS FOR PREVENTION OF CIVILIZATION-RELATED DISEASES

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Preface

The improvement of the quality of life is in focus of research of many groups, worldwide. It is also regarded as an important issue by societies and governments. Undoubtedly, quality of life is a complex issue related to agriculture and fisheries, technology, environment, and health. The quality and safety of food, controlling diseases, sustainable development of agriculture and fisheries, protection of environment, high quality health care for the entire society, are the key elements of the life quality. Improving the quality of life includes such factors as functional food products, food products of natural origin, nutraceuticals, diet supplements, promoting physical activity and modern physiotherapy, as well as advances in biotechnology and biomedical engineering.

The term “nutraceuticals” is a combination of two words, “nutrition” and “pharmaceutical”. It was first used in 1989 by S. De Felice – chairman of the American “Foundation for Innovation in Medicine”, whose primary aim was “to accelerate medical discovery by creating a more productive clinical research community”. The term was quickly accepted in many biomedical studies. By definition, nutraceuticals are substances that may be considered as food or food components, beneficial for human health and helping to prevent civilisation-related diseases. Nutraceuticals are not drugs, but food products. They contain biologically active substances that may strengthen, weaken or modify physiological and metabolic functions of human body and, at the same time, they may play a positive role in the prevention of many chronic and civilisation-related diseases.

The population of Europe is getting older and that is why a new style of life should be promoted. It is expected that in the year 2030, over 30% of the European population will be older than 60 years. It is assumed that in 2050, ca. 30% of the population will be persons aged 80 and more. Due to this fact, the main objective of social policy is to promote healthy style of life, physical activity, physiotherapeutic methods for individualized prevention and therapy, balanced diet and consumption of natural biologically active substances, including nutraceuticals.

The aim of the current research is to elaborate a new generation of natural products and to formulate biotechnological methods for obtaining or producing bioactive substances. These substances include eggs, colostrum, honey, fish, herbs, fruits, algae or even some microorganisms. Contemporary nutritional education must refer to physiology and biochemistry. Psychology combined with nutritional physiology and the use of new generation nutraceuticals is becoming an important element in preventing civilisation-related diseases.

From the other hand, the progress in health care, leading to higher life standard, requires new technological developments. Thus, the role of biomedical engineering will be still growing. New products, new therapeutic methods and diagnostic modalities have to be developed. The conventional medicine with standard therapeutic procedures must change into the patients-oriented health care. Each patient risks and benefits should be recognized in order to define the best approach to the prevention or therapy. Identifying and maximizing movement potential of people in every age, is the main focus of physiotherapy. Physiotherapeutic methods help individuals with health problems, as well as allow healthy people to preserve their vital capacity. They are powerful remedy against civilization-related diseases. Progress in biomedical engineering results in new specialized devices for physiotherapy. Proper physiotherapy, physical activity and proper diet will help individuals to maintain good health and physical condition. Biomedical engineering encompasses also developments of new biomaterial and nanomaterials with tailored properties, elaboration of new diagnostic and therapeutic methods. The improvements of quality of life are also influenced by advances in basic science, like chemistry, biochemistry and physics. The interdisciplinary field of science, technology and clinical applications, bringing together the intra- and interdisciplinary knowledge and experiences may result in new solutions for benefit of human being.

This book presents some chosen topics in these fascinating areas. Overview chapters along with short or long works of young scientists are the essence of this intradisciplinary publication. Moreover, the book is also manifestation of cooperation's and friendships between scientists from various disciplines and various countries. Editors being the former Fellows of the Alexander von Humboldt Foundation and members of the Societas Humboldtiana Polonorum, here-with would like to honour the memory of Prof. Dr. Gerhard Müller Prof. h.c Dr. h.c. mult. who passed away in 2010 in Berlin after a prolonged illness. He was our friend, friend of Poland and of the Societas Humboldtiana Polonorum. He was cooperating extensively with scientists from Wrocław University of Technology and Wrocław University of Environmental and Life Sciences. We will be missing his supporting interdisciplinary expertise and his friendly relationship to colleagues in Wrocław.

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Halina Podbielska and Tadeusz Trziszka
Editors

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