Iron particles in the human body

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Abstract

Iron is an essential chemical element in the body, accumulating in cells and tissues. It may affect their structure and function. Interaction with molecules can further lead to (bio)mineralisation in cells and organs. The magnetic field of biominerals is found in many neurological diseases. It is crucial to know the distribution, localisation, structure, magnetic, electrical and optical properties of biominerals. An interdisciplinary approach to research, based on the application of physical, chemical and biological methods can help to solve the mechanisms of iron accumulation and its impact on the human body.

About the lecturer

Assoc. Prof. Martin Kopáni is currently Head of the Institute of Medical Physics and Biophysics, Faculty of Medicine, Comenius University Bratislava. Previously, he has been working at the Department of Pathology of the same faculty since 1999. His main research interest focuses on the broad field of applied physical methods used in medicine, mainly scanning electron microscopy with energy-dispersive microanalysis and transmission electron microscopy, i.e. application of the SEM+EDX microanalysis for confirmation of chemical elements in human tissues and cells such as copper in human liver in Wilson's disease and iron in haemochromatosis. He regularly presents his work at international conferences and publishes in biomedical journals.

Prof. Kopáni also works as a supervisor of the students participating at the Medical Students Researcher Contest and regularly participates in teaching of laboratory medical technicians and of medical students. He gives lectures e.g. to the third-year students of Biomedical Physics and students of General Medicine concerning physical methods applied in pathology and basic histopathological techniques (fixation, staining).