J Nanomedine Biotherapeutic Discov, Volume: 08
DOI: 10.4172/2155-983X-C1-003

Role and place of instrumental analytical methods in medical elementology - A new scientific discipline

Vladimir Zaichick
Medical Radiological Research Centre, Russia

Since the times of the alchemists, chemical elements have been investigated in human organs, tissues and fluids. During the last decades the number of publications devoted to them increased considerably. Today, the number of published articles may be estimated at about twenty thousands, and the amount of monographs about hundred. This vast amount of data, dealing with the importance of elements acquired in different fields of scientific research and practical life, puts forward the need for a synthetic approach in element research. At the end of the 20th century, a new scientific discipline appeared, focused on the role of chemical elements in human body under physiological and pathological conditions. This new field of interdisciplinary study has been named: "Medical Elementology" (from lat. "*medicina*" and "*elementum*"). A lot of medical doctors, toxicologists, ecologists, chemists and physicists who were involved in the study of chemical elements in medicine and biology had thus the feeling that they were working in new self-sufficient scientific sphere. As a rule, all scientific disciplines are characterized, first of all: By the subject of study; by accepted postulates; by research methods; by methods of quality control; and by terms and definitions. Instrumental analytical methods such as non-destructive NAA and EDXRF (including TXRF) as well as destructive ICP-AES and ICP-MS are the main research instruments in medical elementology. Role and place of these methods will be discussed using our results obtained in studies of chemical element contents in human bone, hair, thyroid and prostate gland.

vzaichick@gmail.com