
USING MULTI-OMICS TECHNOLOGIES IN INNOVATIVE MEDICINE

D.K. Sharipov¹, A.G. Agibayeva¹, S.T. Malimbaev¹

¹*Kazakh National Medical University named after S.D. Asfendiyarov (Almaty, Kazakhstan)*
dksharipov@mail.ru

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Introduction. Medicine of the XXI century is inextricably linked and increasingly uses data of OMICS technologies for the diagnosis and treatment of various diseases.

Methods. The research of metallome was carried out by atomic emission spectrometry with inductively coupled argon plasma and mass spectrometry with inductively coupled plasma. The object of research were the hair of people aged 20-45 of both sexes, not engaged in the manufacturing and harmful working conditions. Hair sheared from back of the head over the entire length at least 0.1 g. To remove surface contamination and degrease from the hair, we used method which recommended by the International Atomic Energy Agency. The methodic is highly informative, effective and sensitive, and at the same time allows defining more than 25 chemical elements in the studied samples.

Results: The hair of more than 50% of women has higher level of phosphorus, zinc, silicon, calcium, magnesium, potassium, sodium, plumbum and chromium, and has lower level of cobalt, zinc, copper, iodine, selenium than the reference intervals for rejection. In men, the content of the chemical elements of potassium, calcium, phosphorus, sodium, chromium, magnesium, iodine, cobalt and boron is increased, and the content of zinc, magnesium, copper, iron and iodine is reduced. It should be noted that the content of calcium, potassium, sodium, phosphorus, chromium and magnesium above normal on a 25-75% in all test groups. More specific was abnormalities, in which marked the high content of essential elements such as zinc and silicon on 40-50% in the body of women. Most impressive one is the deficiency of cobalt, copper, zinc, iodine and potassium on a 30-70% in the body of both studied groups.

Conclusions. Unidirectional changes in the content of essential elements such as copper, zinc, iodine and potassium towards to the lack of it, especially a significant reduction of the cobalt level (65-73%) may be indicative of pathological disorders in the metabolism, violation of intracellular homeostasis and metallome pool.