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CONTENT OF THE SELECTED TRACE ELEMENTS (Al, As, Cd, Cu, Fe, Hg, Mn, Ni, Pb, Zn) IN BLOOD, URINE AND HAIR OF BLOOD DONORS WITHOUT OCCUPATIONAL EXPOSURE TO THESE METALS

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SUMMARY

The trace element content in biological samples from blood donors (BD) has not been studied in detail so far. In everyday practice minimum attention is paid to the occupational history of blood donors from different social strata.

In addition to clinical and elementary haematological and biochemical examinations, the authors assessed levels of Al, As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, and Zn using atomic absorption spectrophotometry (AAS) in two groups of BD – from the Orava (n=19) and Prievidza region (n=29).

The examined blood donors were never exposed to the risk of metal exposure. No significant differences were found in age and smoking habits between the groups. In analyses electrothermic atomization (AAS-GTA) was mostly used. Hg in urine was assessed, using the technique of hydride vapour formation (VGA).

Comparing the results of both BD groups, using Student's t-test, some significant differences between the two regions were found in As, Pb, Cr, Cd, Mn, Ni levels.

The authors discuss the possible influence of artifical metal sources from the plants contaminating the environment of the regions for prolonged periods (power plant using coal containing As, metallurgy plant producing ferrochromium and ferromanganese alloys and lead metallurgy plant.

Blood levels of metals in BD compared with control groups of the non-exposed population (data obtained from the literature) were within a similar or often lower range. In BD studied very low values of Hg in urine were found (0.015 ± 0.004 µmol.l^{-1}, 0.021 ± 0.001 µmol.l^{-1} of urine – $\bar{x}\pm SE$) with the maximum recorded value of 1.0 µmol Pb.l^{-1} of blood.

Key words: blood donors, north-west Slovakia, levels of trace elements in biological material, AAS methods, hair, urine, blood, smoking

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