

## Monitoring of metal ions in the plasma of children with tumour diseases

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### ABSTRACT

Human exposure to metals is common due to wide presence in industry and long-term environmental persistence. Among the general population, exposure to a number of metals is widespread but generally at substantially lower levels than have been found in industry. Accumulation of metal ions in fatty tissues and circulatory system, negative effects on central nervous system and functioning of internal organs as well as acting as triggers of several serious diseases including tumour ones can be listed as adverse effects of metal ions on humans. Metals are toxic especially for children, because of their tolerance to poisons is lower.

In this study the changes of metal ions levels (Zn, Cd, Pb and Cu) were monitored in the blood plasma of child patients treated for various oncological diseases. Electrochemical method differential pulse voltammetry with fully automated system and atomic absorption spectrometry was used for determination of the metal ions.

It was found an increased amount of metal ions in the blood plasma of patients suffering from cancer disease in comparison with physiological values in healthy people. Highest levels of Zn(II) were detected in neuroblastoma and hepatoblastoma, Cd(II) in the non-Hodgkin lymphoma, Pb(II) for nephroblastoma and testicular germ cell tumour and Cu(II) in testicular germ cell tumour and hepatoblastoma.

**Keywords:** AAS; Electrochemical Analysis; Metals; Oncological Diseases; Plasma;

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