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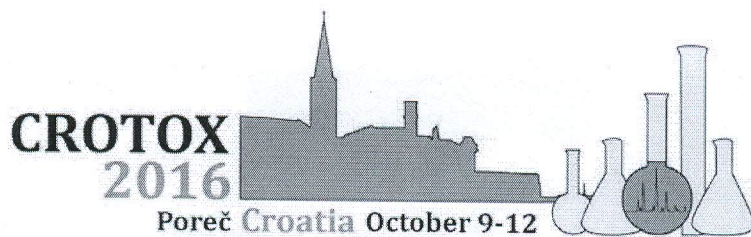
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Cover page: *Sunset is still my favourite colour.*

Photographed by Linda Pošćić Borovac

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Abstracts of the 5th Croatian Congress of Toxicology with International Participation

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ASSESSMENT OF EXPOSURE AND RISK OF TOXIC EFFECTS OF CADMIUM IN METAL PROCESSING INDUSTRY

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Cadmium is a common occupational and environmental pollutant and a highly toxic metal. It is used in the process of corrosion protection due to its anticorrosive properties. Occupational exposure to cadmium occurs during the autogenous cutting and heat treatment of metal structures. The effects of occupational poisoning occur after long-term exposure. Given that, biological markers of chronic low-level exposure are important biological indicators of health risk. An epidemiological cohort study was performed during ten years in exposed workers employed in metal processing industry "NISSAL" ad. In this study, cadmium concentrations in blood and urine (24-h urine sample) were measured using atomic absorption spectrometry. For statistical analysis, Excel, Matlab, and SPSS19.0 software packages were used. The average concentration of blood cadmium was $0.053 \mu\text{mol L}^{-1}$, maximum value was $0.196 \mu\text{mol L}^{-1}$, while the most frequent value was $0.023 \mu\text{mol L}^{-1}$. The mean value of urine cadmium concentration was $0.015 \mu\text{mol L}^{-1}$, compared to the maximum value of $0.058 \mu\text{mol L}^{-1}$. The level of cadmium in blood and urine of exposed groups (N=60) was positively correlated with age ($r=0.722$, $p<0.01$ and $r=0.656$, $p<0.01$). Positive correlation was also determined between the concentration of cadmium in blood and urine and the length of occupational exposure ($r=0.806$, $p<0.01$ and $r=0.705$, $p<0.01$). The results showed that chronic occupational cadmium exposure increased metal concentrations with a potential for a high risk of toxic effects that positively correlated with age and exposure duration. These data confirm that occupational exposure to cadmium should be regularly controlled to prevent adverse health effects in exposed persons.

KEY WORDS: *metal industry, occupational exposure, risk of occupational poisoning*

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THE POTENTIAL ROLE OF METAL-INDUCED OXIDATIVE STRESS IN HUMAN PANCREATIC CANCER: PRELIMINARY RESULTS

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Pancreatic cancer (PC) is one of the most aggressive types of cancer and a worldwide health treat. However, it is rather unclear which environmental pollutants can be linked to PC development. Exposure to toxic metals through various sources can be one of the risk factors, especially having in mind that some toxic metals can induce oxidative stress, which has already been associated with the pathogenesis of PC. The aim of this study was to investigate the levels of cadmium (Cd) and lead (Pb), toxic metals of great environmental concern known to induce oxidative stress, in the blood of PC patients and healthy control subjects, as well as to examine the following biomarkers of oxidative stress: superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GSH-Px), glutathione reductase (GR), glutathione S-transferase (GST), glutathione (GSH), sulfhydryl groups (SH), and lipid peroxides (TBARS) in blood. Blood samples were obtained from 15 PC patients and 7 healthy subjects. The present study demonstrated a significant increase in Pb concentrations in patients with carcinoma when compared to healthy subjects ($p<0.05$), while no significant differences were observed in Cd levels. The activities of SOD and CAT, as well as the concentration of SH groups, were significantly higher in people with PC compared with controls ($p<0.05$) proving oxidative stress induction in the blood of PC patients. This work contributes to a better understanding of the potential role of metal-induced oxidative stress in PC aetiology. However, confirmation of these pilot findings in a larger study is needed.

KEY WORDS: *antioxidative enzymes, environmental pollutants, lipid peroxidation, pancreatic cancer*