

## 8-Hydroxy-2'-Deoxyguanosine in Urine as a Marker of Oxidative DNA Damage in Ex Miners of Idrija Mercury Mine

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**Abstract:** Genotoxic effects of mercury, which are frequently mentioned in the literature, were also demonstrated in mercury miners in Idrija. Products of oxidatively damaged DNA in occupationally exposed population of mercury miners have not been studied yet. One of the main products of oxidatively damaged DNA is 8-hydroxy-2'-deoxyguanosine (8-OH-dG); after the enzymatic cleavage it is released into systemic circulation and secreted in urine. Concentration of 8-OH-dG in urine is considered to be an indicator of whole-body DNA damage.

**Objective:** The principal objective was to find out whether the accumulated level of elemental mercury in previous occupational exposure promoted oxidative damage of DNA. In the study we evaluated the biological indices of miner's past occupational exposure to Hg<sup>0</sup> and measured the concentration of present mercury in urine samples (U-Hg) obtained from 30 ex mercury miners and 43 controls. We determined oxidative DNA damage through the measurement of 8-OH-dG in urine.

**Findings:** The miner's U-Hg levels obtained during the past exposure varied from 0.40 to 7.50 micro g/g creat (geometrical mean). Significantly higher concentration of mercury was measured in the group of miners than in the control group ( $p < 0.01$ ). The concentration (mean and 95 % confidence interval) of 8-OH-dG in the group of miners was 2,69 (1.98–3.40) nmol/mmol creatinine. The value in the control group was 1.87 (1.48–2.26), the difference between the groups was significant ( $p = 0.03$ ).

The results of present study suggested that previous occupational exposure to elemental mercury could contribute to oxidative DNA damage in ex mercury miners.