

## Pineal Hormone Melatonin in Blood and Urine in Ex Miners of Idrija Mercury Mine

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**Abstract:** It is known that high Hg accumulation has been found in the pineal gland in retired miners which could modify the synthesis of melatonin (MEL). There are no data available in the scientific literature on the possible effect of Hg on MEL excretion.

The principal objective of the study was to test the hypothesis that long term past occupational exposure to Hg<sup>0</sup> in miners could modify the level of pineal hormone MEL in blood and urine.

120 males were examined in the study. After selection the study population comprised 54 mercury miners and 58 age matched workers from the control group.

Environmental and biological data on the group of miners studied were collected from 1959 to 2000 from workload records, daily reports on Hg<sup>0</sup> measurements in the workplace and personal medical records and biological monitoring data. Blood and urine MEL was determined by the ELISA method (IBL-Hamburg).

The mean concentration of B-MEL in miners was significantly higher ( $p < 0.01$ ) than in controls. The mean value of U-MEL sulphate in miners was significantly lower ( $p < 0.01$ ) than in the control group.

B-MEL positively correlated with years of miners' exposure to Hg<sup>0</sup> ( $p < 0.01$ ) and was not associated with miners' age. A significant negative correlation was found between U-MEL sulphate and miners' age which could not be a consequence of lowered MEL synthesis as B-MEL in miners was very high.

The increased melatonin secretion could be an adaptive response induced by accumulated Hg.