

عنوان مقاله:

Evaluating Heavy Metal Contamination Effects on the Caspian Pond Turtle Health (*Mauremys caspica caspica*) Through Analyzing Oxidative Stress Factors

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خلاصه مقاله:

Background and aims: Antioxidant defense plays a vital part in organism protection against oxidative stress which is produced by reactive oxygen species (ROS). Oxidative stress represents a serious threat to the animals facing with heavy metals. This study was designed to analyze the habitat suitability for Caspian pond turtles, namely, *Mauremys caspica* in Mazandaran province by measuring lead (Hg) and mercury (Pb) tissues concentrations and heavy metals' effects on the health status of Caspian pond turtles through quantifying the oxidative stress factors. Methods: Hg and Pb were measured in kidney and liver tissues of 20 sampled Caspian pond male turtles (treatment group) using atomic absorption spectrometry (AAS) and a Caspian pond male turtle was included in the control group. Moreover, glutathione (GSH) level, catalase (CAT), and superoxide dismutase (SOD) activities were investigated in kidney and liver tissues. Results: The mean (SD) concentration of Pb and Hg were 35.83 (4.20), and 0.604 (0.03) mg/kg for the sampled livers and also 31.01 (3.42) mg/kg and 0.316 (0.04) mg/kg for the sampled kidneys, respectively. Levels of trace elements, CAT, and SOD activities were found to be higher in the liver. Totally, GSH levels, as well as, CAT, and SOD activities were found to be higher and lower, respectively, in the control turtle as compared with the contaminated Caspian pond turtles. Trace-element level had a positive correlation with CAT and SOD activities while having a negative association with GSH levels in contaminated Caspian pond sampled turtles. Conclusion: According to the results, it was inferred that high Hg and Pb concentrations in the turtles were due to the heavy metal contamination of their habitat in Mazandaran province. Based on the positive correlation between the heavy metal concentration of the tissue and dysfunction of oxidative stress defense markers, it can be concluded when the Caspian pond turtles are faced with heavy metal contamination risk, these markers can act as a bioindicator of their health status. No doubt, more studies are required to prove this hypothesis.

کلمات کلیدی:

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