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Título artículo: Tools for non-invasive sampling of metal accumulation and its effects in Mediterranean pond turtle populations inhabiting mining areas

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RESUMEN: Among reptiles, freshwater turtle species have high potential for metal accumulation because of their long lifespan or their aquatic and terrestrial habits. In order to monitor metal bioaccumulation, determine potential toxic effects, and investigate tools for non-invasive metal sampling in reptiles, we studied lead (Pb) and mercury (Hg) accumulation in Mediterranean pond turtles (*Mauremys leprosa*) inhabiting two former mining areas, one of them with high environmental concentrations of Pb (Sierra Madrona-Alcudia Valley district) and the other one with high environmental concentrations of Hg (Almadén district). Individuals from the Pb mining area showed mean blood concentrations (i.e. 5.59 mg Pb/g dry weight, d.w.) that were higher than those measured in other populations. Blood Hg concentrations were highest (8.83 mg Hg/g d.w.) in the site close to the former Hg mines, whereas blood Hg concentrations in terrapins from another site of Almadén district, located ~28 km downstream, were not different from locations at the non-mining area. Animals from the Pb-contaminated site showed evidence of oxidative stress, whereas those from the Hg-contaminated site showed increased activity of the antioxidant enzyme glutathione peroxidase, as well as reduced circulating levels of the main endogenous antioxidant peptide, glutathione. Concentrations measured in feces and carapace scutes were useful indicators to monitor blood concentrations of Pb, but not of Hg. Our results provide evidence of the usefulness of freshwater turtles as sentinels of chronic metal pollution, and validate non-invasive tools to advance Pb monitoring in reptiles.