

The perks of being a claw: another possibility for metal exposure studies in crocodylians

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Abstract: In the past decades, studies of metals in crocodylian keratinized tissues (mostly, caudal scutes) and blood have been conducted. However, these samples present some disadvantages: the amount of tissue and blood required for such analyses is considerably high and the collection of blood requires especial equipments. Few studies have explored the advantages of claws as an indicator of metal exposure. We therefore analyzed two physiological (Cu and Zn) and two xenobiotic (Cd and Hg) metals in keratinized tissues (caudal scutes, skin and claws) of captive Morelet's crocodiles (*Crocodylus moreletii*) and compared them with concentrations of a wild population from Chichankanab Lake, in order to assess the potential of claws for the monitoring of metals. Claws presented the highest concentrations of metals in both captive ($\text{Hg} = 0.44 \pm 0.23 \mu\text{g g}^{-1}$, $\text{Cd} = 11.10 \pm 5.89 \mu\text{g g}^{-1}$, $\text{Cu} = 45.98 \pm 23.18 \mu\text{g g}^{-1}$, $\text{Zn} = 124.75 \pm 75.84 \mu\text{g g}^{-1}$) and wild individuals ($\text{Hg} = 1.31 \pm 0.32 \mu\text{g g}^{-1}$, $\text{Cd} = 26.47 \pm 21.15 \mu\text{g g}^{-1}$, $\text{Cu} = 191.75 \pm 165.91 \mu\text{g g}^{-1}$, $\text{Zn} = 265.81 \pm 90.62 \mu\text{g g}^{-1}$). The post-hoc test revealed that Hg and Cd in claws and scutes are not different, although both metals were different from the concentrations in skin. As for Cu and Zn, the concentrations in claws were completely different from scutes and skin. Our results demonstrate claws are an excellent tool for assessing metal exposure, especially in populations in which scutes clipping as a marking technique is not allowed, and their collection and preservation is less complicated than other tissues. We strongly recommend their implementation in studies of metal exposure in crocodylians.

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