Conservation and Ecosystem Services

Lead (Pb) bioconcentration in cestode parasites (*Hymenolepis* spp.) of rats (*Rattus* spp.) and their potential as indicator of heavy metal contamination in terrestrial environments

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There is a dearth of information about the use of parasites as indicators of lead (Pb) contamination in various terrestrial environments. In this study, *Hymenolepis* spp. from *Rattus* spp. samples collected in Los Baños, Laguna were subjected to lead concentration analysis. Rat samples were infected with intestinal cestodes, *Hymenolepis diminuta* (35.6%), and *Hymenolepis nana* (34.4%), and the liver parasite, *Taenia taeniaformis* (48.9%). Cestode prevalence was highest in *Rattus norvegicus* at 68.4%. Lead concentration (ppm) was observed to be highest in rats from agricultural sites, followed by residential rats, and lastly by forest rats. A higher lead bioconcentration factor (BF) was revealed in *Hymenolepis* spp. than in the rat host's intestine, kidney, and liver; however host muscle tissue had higher lead BF. No significant difference ($p=0.612$) in Pb concentration was observed between infected and uninfected rats. Lastly, a weak correlation between parasite burden and Pb concentration in rat tissues was observed ($r=0.140$). This study reveals that *Hymenolepis* spp. could bioaccumulate lead in rat hosts. However, it may not be as sensitive as other parasites observed in other host-parasite relationships. It is recommended to conduct laboratory experiments to establish the potential of intestinal parasites of rats to influence accumulation of heavy metals in the animal host's tissues.

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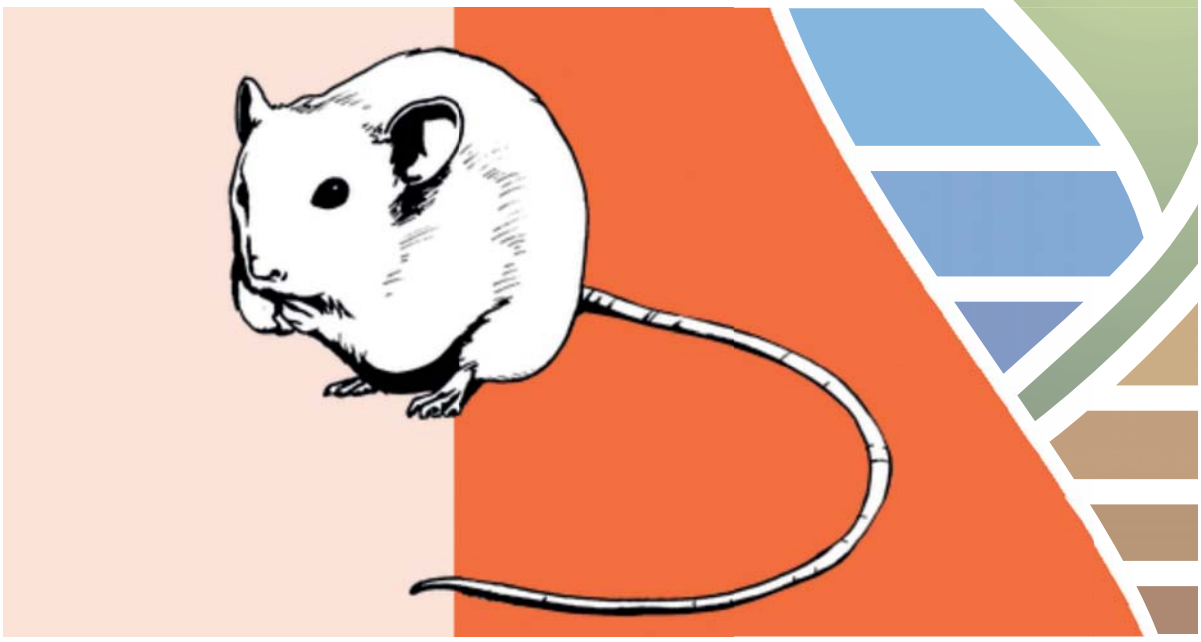

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