Impact of Anthropogenic Activities on Soil Quality Using the Land Snail Cantareus apertus as Bioindicator of Heavy Metals Accumulation in The Bejaia Region (Northeastern Algeria)

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Abstract : The main goal of this study was to investigate the impact of anthropogenic activities on soil quality using the land snail Cantareusapertus as a bioindicator of heavy metal accumulation. Concentrations of cadmium, copper, and zinc were measured in various body organs, viz: viscera and foot of the land snail Cantareusapertus. The snails were collected from two different sites in the Bejaia region (Northeastern Algeria), exposed to different sources of contamination by trace metals. The first sampling site is an urban areas, and the second is characterized by heavy industry, a potential source of soil pollution via heavy metal contamination. The concentrations of heavy metal in all viscera and foot samples were measured using an atomic absorption spectrophotometer. Bioconcentration of the trace metals Cu, Zn, and Cd varied between the viscera and the foot with the viscera having the highest concentration (µgg-1) of all metals than the foots; Cu, 2.03 – 5.8 (Viscera), 0.05 – 3.30 (Foot), Zn, 23.64 – 45.02 (Viscera), 1.87 – 15.15 (Foot) and Cd, 0.36 – 15.26 (Viscera), 0.18 – 13.73 (Foot), which suggest that ingestion may be the main uptake route of these essential metals. On the other hand, the levels of heavy metals varied significantly among the sampling area ($P<0.001$). in fact, in the foots as well as in the viscera, the concentrations of all studied metals is significantly higher in the snails sampled from sites closest to potential sources of pollution compared to those collected from urban areas characterized by moderate pollution.

Keywords : anthropogenic activities, Bioconcentration, Cantareus apertus, trace metals
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