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Final Abstract

The ASARCO copper smelter operated for over 100 years in Tacoma, Washington contributing to heavy air pollution that settled on the surface soil and remains until this day although the smelter has not been operational for over 30 years. The arsenic contamination of lakes surrounding the Puget Sound impose a threat to the species that inhabit them. Previous studies have shown the relevance of the gut microbiome on rocky mountain snails (*oreohelix strigosa*) to help with conservation and management of this species, but the relationship between heavy metal uptake and the gut microbiome is not well understood or established. HSP70 are a family of conserved ubiquitous heat shock proteins, high levels are produced by cells as a response to oxidative stress, hyperthermia, and changes in pH. We hypothesize that there will be an increased HSP70 expression when there are more bioavailable arsenic sources to the organism. To test the heavy metal response, lab snails were fed plants in arsenic containing water from three lakes (Killarney = High As, Steel = Mod. As, Meridian= No As) in the Puget Sound. BCA assays, Western-Blots, and SDS Pages were performed to detect HSP70 expressions. Our data showed that snails that consumed plants from the least exposed arsenic had a higher expression of HSP70. These results do not support our initial hypothesis that high arsenic levels will induce physiological stress in all snails. Future research could include a more controlled environment of arsenic exposure on specific snails, along with other invertebrates such as mollusks or shrimp.