

Understanding the consequences of local arsenic (As) contamination in freshwater organisms is paramount, particularly in regions with legacy contamination. The intricate relationship between As exposure and gut microbiota suggests that As metabolism of freshwater invertebrates is possible, which may lead to potential remediation tools. In this study, invasive Chinese Mystery Snails (CMS) were obtained from reference and contaminated lakes around the South Puget Sound as a means to understand where As bioaccumulates within various tissues (head/ foot, mantle, gut, and everything else). We tested whether gut tissue would sequester more As than other tissues, and if As would cause an immunological response. An exposure experiment placed a subset of the snails into multiple environments, including a negative control, As(v), vehicle control, and an antibiotic cocktail of amp, clm, and ampB. We confirmed As presence throughout all snail tissue, with the highest concentration in the gut. These results suggest that the gut microbiota of snails may play an important role in the modulation of As toxicity and bioaccumulation in the snail. Our data also suggests that As(v) exposure induces immunological stress upon the snails such as increased hemocyte count, a measure of immunological cells per one square millimeter. In totality, we were able to establish that gut tissue sequestered more As than other tissues, and that immunological stress can be induced due to As exposure. This research is useful because snails are primary consumers, therefore if As is impacting snail health, it may impact organisms that feed on them.