

Review: Assimilation efficiencies and elimination rates of trace metals accumulated by trophic pathway in *Gammarus fossarum*

<https://doi.org/10.1101/2023.07.14.549054>

Overall

The manuscript is well written, clear, and precise. Assertions are well supported. The method is clear and complete with enough detail for reproducibility. Assumptions and interpretations of data are structured and well documented. Maybe a critical perspective on what could be improved in this study, as well as potential weak points or unaddressed blind spots and potential steps forward is missing at the end of the discussion.

Title/Abstract/Introduction

The title reflects the content of the article. The summary is concise and clearly presents the main assumptions and conclusions of the study. The introduction is well detailed, it provides all the information necessary to understand the objective and the framework of the experiment. The research question is clearly presented, based on relevant literature and previous research conducted in the field.

Materials and Methods

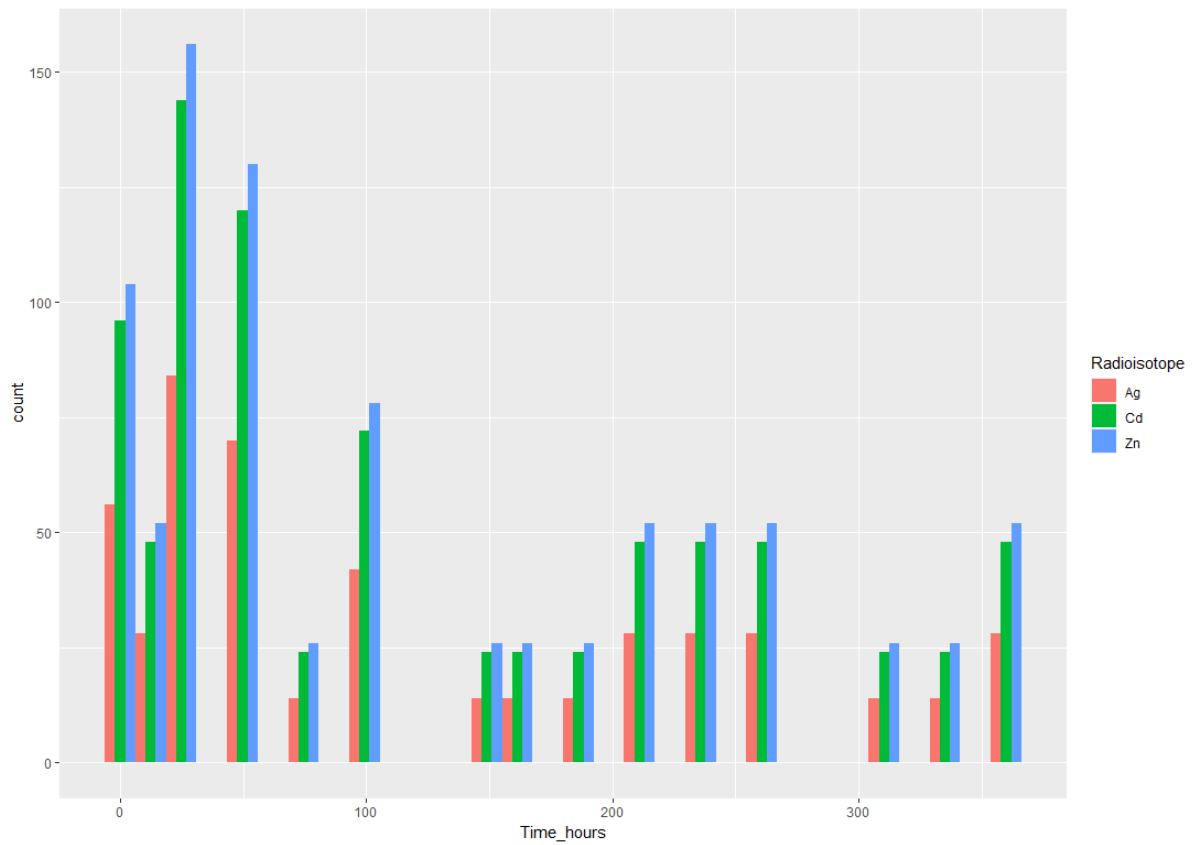
Sufficient details are provided in “Materials and Methods” to allow replication of the experiment. Statistical analysis seems appropriate. However, the R script used for data analysis could be made available to allow better reproducibility of the analysis. The experimental design seems consistent with the questions. Some remarks and questions concerning the experimental plan:

- Have you considered the reproductive period as a potential influencing factor for AE and elimination rate (1)?
- What is the reason for this choice of sampling time? Where is the literature to support this choice?
 - “Individuals were sampled and counted at days 0.5, 1, 1.5, 2, 4, 7, 9, 11 and 14”
- Why have different concentrations of radiotracers been used for food contamination? Where is the literature to support this choice?
 - “The leaf discs (...) were placed in (...) water contaminated with 2010, 2030 or 2000 Bq.mL⁻¹ of ¹⁰⁹Cd, ⁶⁵Zn and ^{110m}Ag, respectively...”
 - “Chironomids larvae were (...) exposed to 201, 203 or 200 Bq.mL⁻¹ for ¹⁰⁹Cd, ⁶⁵Zn and ^{110m}Ag”
- What is the reason for the difference in exposure time? Where is the literature to support this choice?
 - “For each metal, they were then either exposed to two radiolabeled leaf discs for 3-5 h, or to one radiolabeled thawed chironomid larva for 1h”

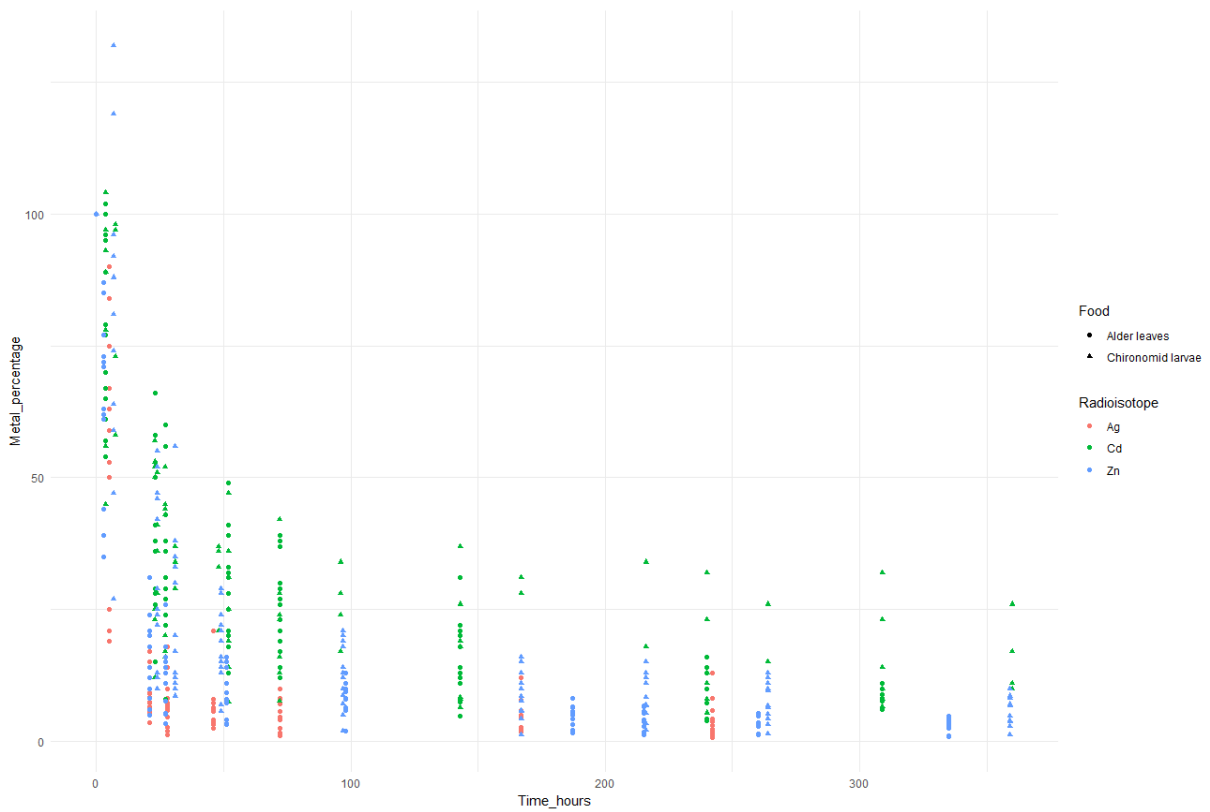
Results

Raw data available. Statistical results support the main conclusions. Some remarks and questions regarding the results:

- Where are the data on mortality rate? Is there an effect on AE or elimination rate?
- Sampling time are not homogenous (see plot below). Measurements were more frequent during the first 100h after exposure and there are periods without sampling. Why? Where is the literature to support this choice?



- I don't understand why there are value above 100% in the percentage of remaining metal in gammarids (see plot below)?



Discussion

The interpretation of the data appears objective and robust. The conclusions are adequately supported by the results and literature. Maybe add what could be improved in the study, explain potential weaknesses or blind spots not covered by this experiment, and suggest potential steps forward.

References

References seem accurate and appropriate. They support the hypotheses, the results, and data interpretation. Perhaps “Material & Method” lacks a few references to support some experimental choices (choice of concentration, choice of exposure time).

Tables and figures

The tables and figures are useful, clear, and complete. They adequately illustrate the methodology and the main results. In Figure 2, maybe outline in the legend what’s (a), (b), (c), (d), (e), or just remove these label from the graph.

Bibliography

1. McCahon CP, Pascoe D. Increased sensitivity to cadmium of the freshwater amphipod *Gammarus pulex* (L.) during the reproductive period. *Aquat Toxicol* [Internet]. 1988 Nov 1 [cited 2023 Sep 5];13(3):183–93. Available from: <https://www.sciencedirect.com/science/article/pii/0166445X88900513>