Effects of metals and metal mixtures on the feeding rate of *Assellus aquaticus* under laboratory conditions

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Feeding is very important because it allows organisms to obtain energy useful for growth, maintenance and reproduction. It has been used in ecotoxicology studies as one of the behavioral responses that may be affected by environmental contaminants. Behavioral studies are preferred because they give short response times which give early warning response, sensitivity for neuromuscular toxins and ecological relevance. Changes in organism behaviour can be used as important indicators for ecosystem health.

The studied species will be *Asellus aquaticus* which have high ecological reference, where they play a key role in leaf litter breakdown and these organisms are important for material transfer in the food web. The aim of this study therefore is to determine the effects of single and combined metal mixtures in the feeding rate of *Asellus aquaticus* under laboratory conditions. Individual *Asellus aquaticus* will be placed in polyethylene vials filled with moderately-hard US EPA medium and spiked with the following metals Cadmium (Cd),Cupper (Cu) and Lead (Pb) and metal mixtures of (Cd+Cu, Cd+Pb, Cu+Pb and Cd+Cu+Pb). The organisms will be fed with Decotab. Seven treatments will be used in this study and 2 time-points (14 and 21 days). The following parameters will be studied: feeding rate, metal bioaccumulation, combined toxicity, and survival. Results from this study will be used to determine the relationship between feeding rate, survival, metal contents, toxicity, bioaccumulation and the interaction of metal mixtures.

Key words
Asellus aquaticus; feeding rate; Decotab; metal mixtures; bioaccumulation; toxicity; survival.

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References

BlockwellHS.J., E.J. Taylor, I. Jones, and D. Pascoe. 1998.The Influence of freshwater pollutants and interaction with *Asellus aquaticus* (L.) on the feeding activity of *Gammarus pulex* (L.) .Arch. Environ. Contam. Toxicol. 34, 41-47.U

Dedourge-Geffard O., F. Palais, S. Biagianti-Risbourg, O. Geffard, and A. Geffard. 2009. Effects of metals on feeding rate and digestive enzymes in *Gammarus fossarum*: an *in situ* experiment. Chemosphere 77:1569-1576

Gerhardt A., C. Kienle, I.J. Allan, R. Greenwood, N. Guigues, A.-M. Fouillac, G.A. Mills, and C. Gonzalez. 2007. Biomonitoring with *Gammarus pulex* at the Meuse (NL), Aller (GER) and Rhine (F) rivers with the online Multispecies Freshwater Biomonitor. J. Environ. Monitor. 9:979-985.

Kampfraath A.A., E.R. Hunting, C. Mulder, A.M. Breure, M.O. Gessner, M.H.S. Kraak, and W. Admiraal. 2012. DECOTAB – a multipurpose standard substrate to assess litter quality effects on microbial decomposition and invertebrate consumption. Freshwater Science 31(4):1156-1162.

Munger Catherine, Landis Hare, and André Tessier. 1999. Cadmium sources and exchange rates for *Chaoborus* larvae in nature. Limnol. Oceanogr. 44(7):1763-1771.

Norwood W.P., U. Borgmann, D.G. Dixon, and A. Wallace. 2003. Effect of metal mixtures on aquatic biota: review of observations and methods. Hum. Ecol. Risk Assessm. 9(4):795-811.

Singer C., N.M. Bello, and B.A. Snyder. 2012. Characterizing prevalence and ecological impact of non-native terrestrial isopods (Isopoda, Oniscidea) in tallgrass prairie. Retrieved from http://krex.ksu.eduHATTUM .

Zimmer Martin. 2002. Nutrition in terrestrial isopods (Isopoda: Oniscidea): an evolutionary-ecological approach. Biol. Rev. 77:455-493.