

195 Effect of temperature on Ni bioaccumulation and chronic toxicity to *Daphnia magna*

C.S. Pereira, GhEnToxLab; C. Janssen, Ghent University / Laboratory of Environmental Toxicology and Aquatic Ecology GhEnToxLab unit; R. Blust, Systemic Physiological and Ecotoxicological Research group University of Antwerp; K. De Schampelaere, Ghent University (UGent) / Laboratory for Environmental Toxicology and Aquatic Ecology GhEnToxLab unit. The mechanisms involved in nickel toxicity are not fully understood. No information is available about the effect of temperature on chronic nickel toxicity to *Daphnia*. Therefore, our first objective was to investigate the effect of temperature on chronic nickel (Ni) toxicity and if a different effect is observed among four *Daphnia magna* clones. The second objective was to understand how temperature affects Ni uptake and elimination in four *D. magna* clones. At 15, 20 and 25°C 21-day life table experiments with Ni were performed with four *D. magna* clones taken from the same natural population. A linear model was built to predict the Ni effect on the reproduction per individual female (R_0) as function of temperature and clone. The effect concentrations (21 d EC₅₀) and concentration response curves were calculated for R_0 of all clones (to mimicked the effects on a population). Effect concentrations of the individual clones were also calculated. Uptake experiment was performed with the four *D. magna* clones exposed to 70 µg Ni.L⁻¹ at 15, 20 and 25°C. Organisms were exposed to the stable isotope ⁶²Ni during 48h. The linear model built indicate that the effect of nickel on reproduction per individual female (R_0) was significantly affected by temperature and that this effect depended on the clone. The 21 d EC₅₀s based on R_0 of all clones (to mimicked a population) tested at 15, 20 and 25°C were 59.2, 74.3 and 121.2 µg Ni.L⁻¹, respectively. This represents a two-fold variation on the 21 d EC₅₀s. Significant interactions were detected between temperature, nickel and clones. After 48h of exposure nickel concentrations in Daphnids were lower at 25°C than at 15 or 20°C. No significant correlation was observed between 21 d EC₅₀ and nickel accumulation after 48h of exposure. This suggests that it is not only the internal body concentration determines the effect of temperature on Ni toxicity but that effect of temperature on the internal sequestration or toxicodynamics processes may also play a role in nickel toxicity. The results of the present study are in contrast with previous acute studies which indicate that acute metal toxicity increases with increasing temperatures. Additionally, on average chronic nickel toxicity decreased at higher temperatures. The present study showed that chronic nickel toxicity was significantly affected by temperature and this effect was different among the four *D. magna* clones tested.