

INTERACTION BETWEEN CADMIUM AND MERCURY ACCUMULATION BY *Daphnia magna* (CRUSTACEAN, BRANCHIOPODA)

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Summary

The objective of this study was to evaluate the effects and interactions of various factors on the simultaneous accumulation of cadmium and mercury contaminants. Two chemical forms of mercury (HgCl_2 and CH_3HgCl) were used in conjunction with inorganic cadmium (as CdCl_2) and the effects of direct and trophic modes of accumulation were investigated.

Daphnia (*Daphnia magna*) were contaminated for 5 days with different concentrations of cadmium (CdCl_2) and mercury (HgCl_2 or CH_3HgCl) in various combinations. Contamination was effected directly via the water, or indirectly via previously contaminated algae (*Chlorella vulgaris*).

As usually observed in aquatic organisms, methylmercury was the form of mercury most efficiently accumulated (Fig. 1). The way of contamination by mercury was also determinante, the results depending on the chemical form used. Thus, although the preferred mode of accumulation of inorganic mercury was via the water, in those daphnia contaminated with methylmercury the preferred mode was via the contaminated algae. However, the accumulation of cadmium was not significantly influenced by the contamination way.

Cadmium and mercury each inhibited the accumulation of the other metal (Fig. 1). Although HgCl_2 was usually the more effective form of mercury in inhibiting the accumulation of cadmium, CH_3HgCl was more effectively inhibited by cadmium.

Keywords: metal pollution, cadmium, mercury, toxicity, *Daphnia magna*.

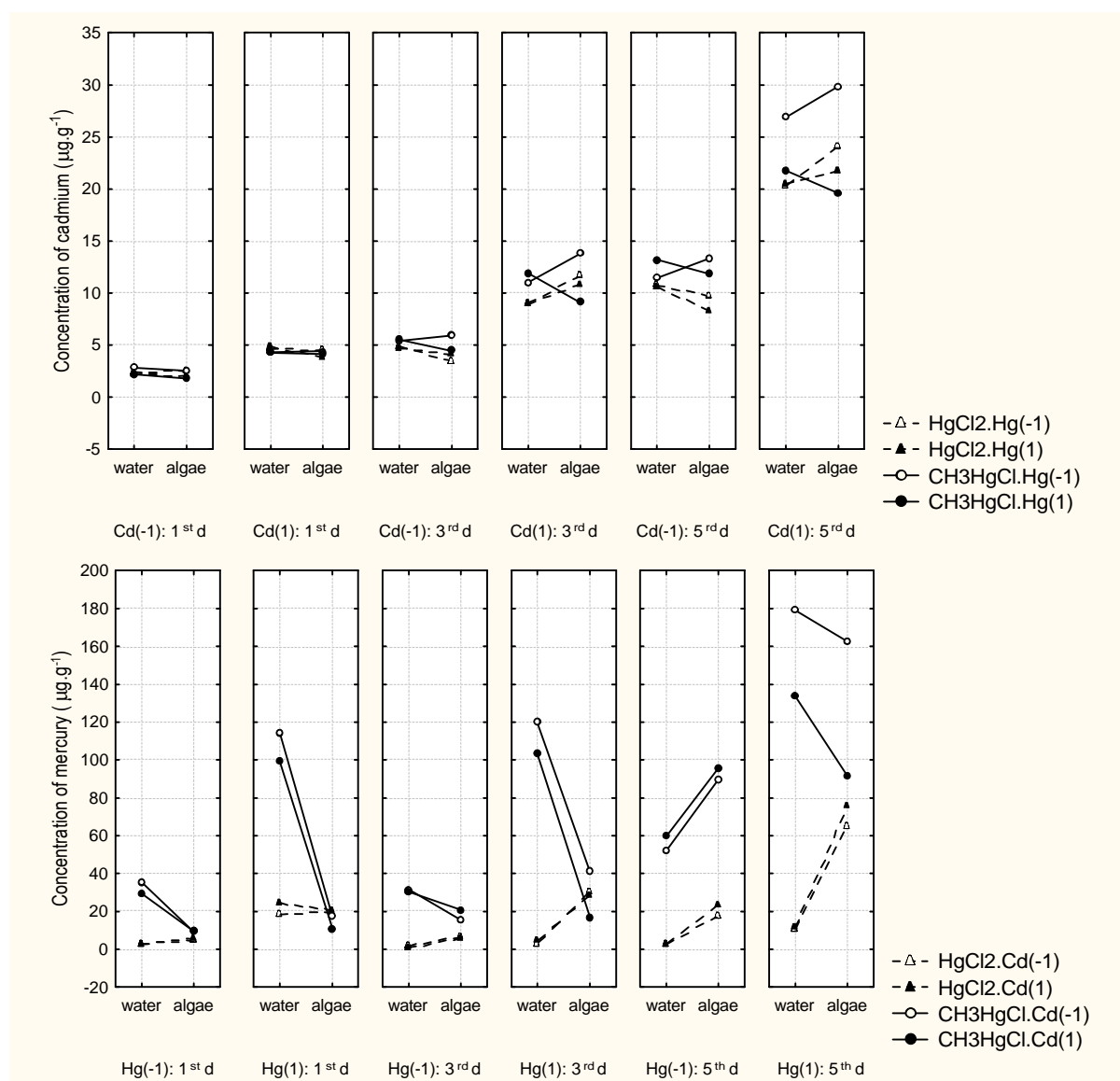


Fig. 1 - Projection of the mean concentration values of cadmium and mercury in daphnias in relation to exposure time and experimental contamination conditions: contamination way (water, algae), chemical form of mercury (HgCl₂, CH₃HgCl), contamination level of mercury (Hg(-1)=0,25g.L⁻¹; Hg(1)=1,00g.L⁻¹) and cadmium contamination level (Cd(-1)=0,25g.L⁻¹; Cd(1)=1,00g.L⁻¹).