

Infestation of fish by endoparasites may potentially influence metal uptake and elimination by the host. We quantified the metal uptake rate constant (k_u) and efflux rate constants (k_e) of radiolabeled Cd and Co in the cyprinid fish *Rastrineobola argentea* experimentally infected with the parasite *Ligula intestinalis*. During 24 h, the accumulation of Cd and Co increased linearly with no evident steady state in uninfected fish, infected fish and in the parasite. Following aqueous exposures, the k_u for Cd in parasites was about 3× higher than that of infected fish and 6× higher than for the uninfected fish. The k_u for Co was up to 15× higher in the parasites than that of infected fish and 7.5× higher than for the uninfected fish. The k_e for excretion of Cd were consistently higher for the uninfected fish than for the infected fish and also higher for uninfected fish than the parasite. The k_e for Co for the uninfected fish was 1.4–2.0× lower than in the infected fish, but higher for parasites compared to uninfected fish (1.3–2.3×). Pulse-chase feeding experiments with radiolabeled copepods showed that Cd assimilation efficiency from food was higher in infected fish, while Co was assimilated more effectively by uninfected fish. The observed differences in metal dynamics between infected and uninfected *R. argentea* in the laboratory concord with differences in metal concentrations measured in natural populations in Lake Victoria. Our findings provide evidence that *L. intestinalis* infection enhances Cd accumulation, but depletes the essential Co in the cyprinid fish *R. argentea*. We conclude that the combined stress of parasites and pollution changes metal risks to fish hosts in a metal specific manner.

Highlights

Infestation of fish by endoparasites may influence metal uptake and elimination by the host. We quantify metal uptake rate constant (k_u) and efflux rate constants (k_e) of radiolabeled Cd and Co in parasitized fish. k_u for Cd was higher in infected than in uninfected fish, while the k_u for Co was higher in uninfected fish. k_e for Cd was higher in uninfected fish, while the k_e for Co was higher in infected than in uninfected fish. Parasite infection enhances Cd accumulation, but depletes Co in the cyprinid fish.