A new model species for long-term toxicity testing: Acute and chronic sensitivity of *Nothobranchius furzeri* to copper and cadmium.

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Nothobranchius furzeri offers a great potential to perform time- and cost-efficient long-term and multigenerational ecotoxicological studies. With a full life cycle of 10-12 weeks on average, compared to other fish-model species (zebrafish 14-22 weeks, medaka 22-29 weeks, fathead minnow 22-43 weeks) and the production of drought resistant dormant eggs that can be stored, overcoming the need and costs of a continuous culture and allowing for a simultaneous hatching of eggs, it is a promising ecotoxicological model. In this presentation, two short and long-term experiments of metal exposure will be put forward as an initial assessment.

The sensitivity of *N. furzeri* to copper ($Cu(NO_3)_2$. $3H_2O$) and cadmium ($CdCl_2$) was assessed in an acute and chronic toxicity test. In these experiments, fish were exposed to a range of metal concentrations, starting from 48h after hatching. In the acute exposure, mortality was scored to quantify LC_{50} values during a period of 14 days. The chronic sensitivity to copper and cadmium was measured using effects on life history traits and bio-accumulation. Additionally, we assessed the effect of temperature (+4°C) on cadmium sensitivity and complemented this test with a CTmax measure. To assess transgenerational effects, we tested acute sensitivity to cadmium of the offspring of cadmium exposed fish (F1) by means of an LT_{50} measure.

Results of both acute toxicity tests demonstrate an overlap in sensitivity range with that of current fish models in ecotoxicology. In addition, acute cadmium exposure was more toxic at a higher temperature. Long-term exposure to copper significantly inhibited growth and increased maturation time. However, fish also seemed to conform to the copper environment by altering their bio-accumulation. The chronic exposure to cadmium and increased temperature showed a higher mortality when stressors were combined. Effects on other endpoints mainly revealed patterns of acclimatisation to higher temperatures. However, indicative of transgenerational effects, offspring of cadmium exposed fish were more sensitive to acute exposure than their parents.

Overall, these results show that with its unique trait-set and similar toxicant-sensitivity to conventional fish models, *N. furzeri* could rapidly be developed as a valuable ecotoxicological model for chronic and multigenerational toxicity testing.

Keywords: Ecotoxicology, long-term exposure, multiple stressors, transgenerational effects

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