Phenotypic and Behavioral Defects Induced by Iron Exposure Can Be Transferred to Progeny in *Caenorhabditis elegans*[1]

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Objective Previous work has showed that excess iron accumulation is harmful to reproduction and even promotes death; however, whether the multiple biological toxicity of iron (Fe) exposure could be transferred to progeny remains unknown. The present study used *Caenorhabditis elegans* to analyze the multiple toxicities of iron exposure and their possible transferable properties. **Methods** Three concentrations of iron sulfate solution (2.5 μmol/L, 75 μmol/L, and 200 μmol/L) were used. The endpoints of lifespan, body size, generation time, brood size, head thrash and body bend frequencies, and chemotaxis plasticity were selected to investigate Fe toxicity and its effect on progeny in *Caenorhabditis elegans*. **Results** The Fe toxicity could cause multiple biological defects in a dose-dependent manner by affecting different endpoints in nematodes. Most of the multiple biological defects and behavior toxicities could be transferred from Fe-exposed *Caenorhabditis elegans* to their progeny. Compared to the parents, no recovery phenotypes were observed for some of the defects in the progeny, such as body bend frequency and life span. We further summarized the defects caused by Fe exposure into 2 groups according to their transferable properties. **Conclusion** Our results suggest that Fe exposure could cause multiple biological defects, and most of these severe defects could be transferred from Fe exposed nematodes to their progeny.

Key words: Iron toxicosis; Transferable; Phenotype; Behavior; *C. elegans*

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