Exposure to Iron Induces Acute Toxicity in *C. elegans*


Grupo de Pesquisa em Bioquímica e Toxicologia em *Caenorhabditis elegans* – GBToxCe - Universidade Federal do Pampa, Uruguaiana, Brasil.

**Introduction:** Because of its redox potential iron is present in the majority of biological systems, exerting essential function as cofactor in the transference and conservation of energetic reactions, on oxygen transport and molecular biosynthesis. However, the accumulation of this metal has been associated with many pathological processes, such as cancer, disease immune system and chronic degenerative diseases. *Caenorhabditis elegans* a free-living soil nematode is an attractive model to study the toxic effects of iron, once is one of the best characterized animal models in genetics and molecular development. This nematode is a multicellular organism with a short lifespan, well-characterized genome, high reproductivity and transparent appearance that is easy to culture and to manipulate and therefore allows various experimental approaches. This study evaluated the acute toxic effects of iron in *C. elegans*, since there is no conclusive evidence about the type of damage caused by exposure to this metal.

**Material and Methods:** L1 worms were exposed to iron concentrations of 0.05mM; 0.1mM; 0.5mM; 1.0 mM; 1.5 mM e 2.0 mM for 30 minutes. After exposure, worms were washed 3 times with saline 85 mM and then transferred to NGM recovery plates inoculated with *Escherichia coli*/OP50, for further evaluation of survival, iron levels and behavior.

**Results and discussion:** The lethal dose was estimated to be 1.2 mM, and increased mortality of the worms occurred in a concentration dependent manner. The iron was measured to verify whether worms were absorbing more metal with increasing concentrations, which was also confirmed. This higher accumulation can induce oxidative damage, particularly in neurons, as reflected by the reduction the in locomotion speed and in sensitive response. **Conclusions:** Our data suggest that the iron exposure causes oxidative damage and possible dysfunction of the nervous system in *C. elegans* specific neuronal damage will be further investigated by our group.

Word-keys: Iron, oxidative stress, locomotion, behavior, *Caenorhabditis elegans*