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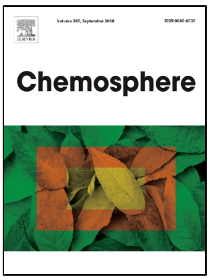

Low-concentration exposure to glyphosate-based herbicide modulates the complexes of the mitochondrial respiratory chain and induces mitochondrial hyperpolarization in the *Danio rerio* brain

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ACCEPTED MANUSCRIPT

Low-concentration exposure to glyphosate-based herbicide modulates the complexes of the mitochondrial respiratory chain and induces mitochondrial hyperpolarization in the *Danio rerio* brain

Aline G. Pereira[a], Michael L. Jaramillo[a], Aline P. Remor[b], Alexandra Latini[c], Carla E. Davico[a], Mariana L. da Silva[d]; Yara M. R. Müller[a], Dib Ammar[ad], Evelise M. Nazari[a#]

[a]Departamento de Biologia Celular, Embriologia e Genética; Centro de Ciências Biológicas, Universidade Federal de Santa Catarina, 88040-900, Brazil.

[b]Universidade do Oeste de Santa Catarina, 89600-000, Brazil

[c]Departamento de Bioquímica, Centro de Ciências Biológicas, Universidade Federal de Santa Catarina, 88040-900, Brazil.

[d]Centro Universitário Católica de Santa Catarina, 89203-005, Brazil.

Corresponding author: Nazari, E.M. (evelise.nazari@ufsc.br)

Abstract

Glyphosate (N-phosphonomethyl-glycine) (GLY) is the active ingredient of the most used herbicides in the world. GLY is applied in formulated products known as glyphosate-based herbicides (GBH), which could induce effects that are not predicted by toxicity assays with pure GLY. This herbicide is classified as organophosphorus compound, which is known to induce neurotoxic effects. Although this compound is classified as non-neurotoxic by regulatory agencies, acute exposure to GBH causes neurological symptoms in humans. However, there is no consensus in relation to neurotoxic effects of GBH. Thus, the aim of this study was to investigate the neurotoxic effects of the GBH in the zebrafish *Danio rerio*, focusing on acute toxicity, the activity

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