

Accepted Manuscript

Title: N-acetylcysteine prevents ketamine-induced adverse effects on development, heart rate and monoaminergic neurons in zebrafish

Authors: Bonnie Robinson, Melanie Dumas, Qiang Gu, Jyotshna Kanungo



PII: S0304-3940(18)30418-X
DOI: <https://doi.org/10.1016/j.neulet.2018.06.014>
Reference: NSL 33645

To appear in: *Neuroscience Letters*

Received date: 15-5-2018
Revised date: 6-6-2018
Accepted date: 7-6-2018

Please cite this article as: Robinson B, Dumas M, Gu Q, Kanungo J, N-acetylcysteine prevents ketamine-induced adverse effects on development, heart rate and monoaminergic neurons in zebrafish, *Neuroscience Letters* (2018), <https://doi.org/10.1016/j.neulet.2018.06.014>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

N-acetylcysteine prevents ketamine-induced adverse effects on development, heart rate and monoaminergic neurons in zebrafish

Running Title: N-acetylcysteine (NAC) prevents ketamine toxicity in zebrafish

Bonnie Robinson, Melanie Dumas, Qiang Gu and Jyotshna Kanungo*

Division of Neurotoxicology, National Center for Toxicological Research, U.S. Food and Drug Administration, 3900 NCTR Road, Jefferson, AR 72079, USA.

***Correspondence:**

Jyotshna Kanungo, PhD
Division of Neurotoxicology,
National Center for Toxicological Research,
U.S. Food and Drug Administration,
3900 NCTR Road,
Jefferson, AR 72079
USA

Tel: 870-543-7591

Fax: 870-543-7143

E-mail: jyotshnabala.kanungo@fda.hhs.gov

Highlights

- Adverse effect of ketamine on zebrafish heart rate is prevented by N-acetylcysteine (NAC).
- NAC prevents ketamine's adverse effects on zebrafish growth.
- NAC prevents ketamine-induced adverse effects on 5-HT neuron development in the brain.
- NAC prevents ketamine-induced developmental defects of tyrosine hydroxylase positive cells.
- NAC at 1 mM does not have any effects on heart rate, growth and monoaminergic neurons.

Abstract

N-acetylcysteine, a precursor molecule of glutathione, is an antioxidant. Ketamine, a pediatric anesthetic, has been implicated in cardiotoxicity and neurotoxicity including modulation of monoaminergic systems in mammals and zebrafish. Here, we show that N-acetylcysteine prevents ketamine's adverse effects on development and monoaminergic neurons in zebrafish embryos. The effects of ketamine and N-acetylcysteine alone or in combination were measured on the heart

Download English Version:

<https://daneshyari.com/en/article/8841402>

Download Persian Version:

<https://daneshyari.com/article/8841402>

[Daneshyari.com](https://daneshyari.com)