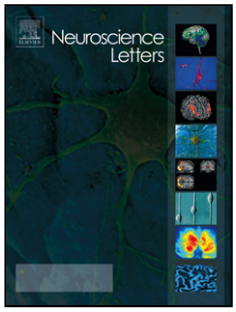

Title: N-acetylcysteine prevents ketamine-induced adverse effects on development, heart rate and monoaminergic neurons in zebrafish

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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

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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