



Name of Journal: *World Journal of Psychiatry*

Manuscript NO: 53542

Manuscript Type: ORIGINAL ARTICLE

*Basic Study*

Comparison of three administration modes of establishing a zebrafish seizure model induced by N-Methyl-D-aspartic acid

Long XY *et al.* Zebrafish seizure model

Xin-Yi Long, Shuang Wang, Zhi-Wen Luo, Xu Zhang, Hong Xu

**Abstract**

BACKGROUND

Epilepsy is a complex neurological disorder characterized by recurrent, unprovoked seizures resulting from the sudden abnormal discharge of brain neurons. It leads to transient brain dysfunction, manifested by abnormal physical movements and consciousness. And it can occur at any age, affecting approximately 65 million worldwide, one third of which are still estimated to suffer from refractory seizures. There is an urgent need for further establishment of seizure models in animals, which provides an approach to model epilepsy and could be used to identify novel anti-epileptic therapeutics in the future.

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By comparing the three different drug administration methods, we discovered the best means to establish effective NMDA-induced models of retinal damage in zebrafish. These models will be valuable for drug screening campaigns and studies to identify the underlying mechanisms of glaucomatous retinal neurodegeneration.

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Aug 18, 2019 · By **comparing the three** different **drug administration methods**, we discovered the best means to **establish effective NMDA-induced models** of **retinal damage in zebrafish**. These **models** will be valuable for **drug screening** campaigns and studies to identify the underlying mechanisms of glaucomatous retinal neurodegeneration.

**Author:** Zhi-Wen Luo, Han-Tsing Wang, Nin... **Publish Year:** 2019

## [The developing utility of zebrafish models of neurological ...](#)

<https://www.sciencedirect.com/science/article/pii/S0014488617302467>

The most common and well-characterized **epilepsy model** in this species is an N-Ethyl-N-nitrosourea (ENU)-**induced model** of Dravet syndrome, a disorder which involves 3 gene mutations (scn1, scn8, and hcn1) and presents as a severe early-onset childhood **epilepsy** with intellectual incapacity, drug-resistant **seizures** and unexpected deaths (Marini et ...

**Cited by:** 70 **Author:** Barbara D. Fontana, Nathana J. Mezzo...

**Publish Year:** 2018

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When expression of the **zebrafish** orthologues of these **two** genes was analysed by whole-mount in situ hybridisation, both npas4 and bdnf transcripts were **induced** in the ventral telencephalon and diencephalon of PTZ-treated embryos, in patterns that are similar to that of fos (Fig. 3). **3 dpf zebrafish embryos** that are homozygous for the recessive mind bomb mutation were previously shown to **exhibit seizure** ...

**Cited by:** 78 **Author:** Sarah Baxendale, Celia J. Holdsworth, ...

**Publish Year:** 2012





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**Author:** Zhi-Wen Luo, Han-Tsing Wang, Ning ... **Publish Year:** 2019

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854733>

The addition of PCBs, HCH, chlordane, and PBDEs at concentrations that co-occur with DDT did not alter the effect of p,p'-DDE to enhance **chemical-induced seizures in zebrafish**. These results indicate that p,p'-DDE accounts for the major toxic activity of fetal sea lion contaminants that lead to greater sensitivity to domoic **acid seizures**.

**Cited by:** 16 **Author:** Jessica A. Tiedeken, John S. Ramsdell

**Publish Year:** 2009

### [The developing utility of zebrafish models of neurological ...](#)

<https://www.sciencedirect.com/science/article/pii/S0014488617302467>

The most common and well-characterized **epilepsy model** in this species is an N-Ethyl-N-nitrosourea (ENU)-**induced model** of Dravet syndrome, a disorder which involves 3 gene mutations (scn1, scn8, and hcn1) and presents as a severe early-onset childhood **epilepsy** with intellectual incapacity, drug-resistant **seizures** and unexpected deaths (Marini et ...

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**Publish Year:** 2018

### [\[PDF\] Zebrafish Seizure Model Identifies p'-DDE as the Dominant ...](#)

[www.otterproject.org/wp-content/uploads/2012/07/...](http://www.otterproject.org/wp-content/uploads/2012/07/...)

exposure of **zebrafish embryos** increases the sensitivity and the manifestation of **seizure behavior induced** by domoic acid after brain maturation (Tiedeken and Ramsdell 2009). The body concentration of