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Investigating the anticonvulsant effect of α -linolenic acid in zebrafish model of pentylenetetrazol-induced convulsionsSavita Kumari¹, Arindam Ghosh Mazumder^{1,2} and Damanpreet Singh^{1,2}¹Institute of Himalayan Bioresource Technology - CSIR, India²Academy of Scientific and Innovative Research, India

In recent years, the interest of general population towards food-based therapies have been astonishingly increased over pharmacotherapies for the reason that they produce lesser side effects and provide cost-effective approach of treatment. In this aspect, the use of antiepileptic drugs in the treatment of epilepsy has been declined and the focus has been shifted to food-based therapies. Different food diets enriched with omega-3 fatty acids have shown good potential to treat epilepsy. The present study was envisaged to investigate the effect of α -linolenic acid (ALA); an essential omega-3 fatty acid in the zebrafish embryos to the pentylenetetrazol (PTZ) induced seizure susceptibility. The safe concentration of ALA was determined by fish embryo acute toxicity (FET) test under OECD (Organization for Economic Co-operation and Development) guidelines 236. The healthy zebrafish eggs were incubated in system water containing different concentrations of ALA (1-20 μ M) till 7 dpf (days post fertilization). The seizure event was recorded at 7 dpf of each larva in 8 mM PTZ solution. ALA incubated groups at 10 μ M and 20 μ M concentrations represented a dose-dependent reduction in PTZ-mediated hyperactive responses in 7 dpf larvae indicated by a marked decline in total distance travelled and speed, in comparison to vehicle control. ALA treated larvae at 10 μ M and 20 μ M concentrations also exhibited a significant decrease in c-fos expression level. This study concluded that embryonic exposure of ALA reduced PTZ-induced seizures in zebrafish larvae.

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