



Effect of fluoride on learning and memory ability of larvae of *Zaprionus indianus*

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Abstract : The study was conducted to see the effect of Fluoride on the learning and memory ability of larvae of *Zaprionus indianus*. The learning and memory ability of 2nd instar larvae of control (normal) and Sodium Fluoride (NaF) treated *Zaprionus indianus* was compared. For this study, four olfactory assay setup was designed namely, control, experimental, avoidance and confirmatory. Sixty larvae of the same age group were used for each assay. Result showed that the larvae of control (normal) *Z. indianus* had better learning and memory ability in comparison to NaF treated *Z. indianus* larvae.

Keywords: *Z. indianus*, Sodium Fluoride, Olfactory assay, 2nd instar larvae.

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Introduction:

Exposure to fluoride can occur through dietary intake, respiration and water. It enters the environment through volcanic eruptions, rock dissolution and numerous human activities (coal burning, ore processing, production and use of fertilizers, and industrial plants). Many pesticides, insecticides and weedicides contain fluoride in high concentrations and the overuse of such chemicals paves way for fluoride to enter the system of non-targeted organisms such as human beings and other animals, and cause derogatory effects. Acute pesticide poisoning occurs frequently in children worldwide, and subclinical pesticide toxicity is also widespread (Grandjean and Landrigan, 2014). Clinical data suggest that acute pesticide poisoning during childhood might lead to neurobehavioural deficits. (Kolman et al, 2006; London et al, 2012). Thus, there is a need to verify the neurotoxic effect of fluoride.

To establish fluoride as a neurotoxin, fruitfly can be used as a model organism. Modelling human brain diseases in fruitflies offers several advantages for investigation of molecular and cellular mechanisms underlying human diseases. Short life span, large number of offspring produced, a well known anatomy and occurrence of a wide variety of mutants are convenient characteristics of