



Amelioration of Fluoride Toxicity on the Reproductive Output of *Drosophila melanogaster* with L. Ascorbic Acid

• Vanshika Singh • Raushni Choudhary • Sanjana Shah
• Shahla Yasmin

Received : November 2017

Accepted : March 2018

Corresponding Author : Shahla Yasmin

Abstract : *The study was conducted to assess the effect of sub-lethal concentration of Sodium Fluoride (NaF) on the reproductive output of Drosophila melanogaster and the possible ameliorative action of ascorbic acid on fluoride induced toxicity on the development of the fly. Results showed that there was significant fall in the number of 3rd instar larvae, pupae and eclosed flies in different concentrations of NaF (0.2 ppm, 0.4 ppm, 0.6 ppm, 0.8 ppm). 1.0 ppm of NaF was lethal for the flies. When ascorbic acid (50 mM) was mixed in the medium, non-significant reduction in number of 3rd instar larvae and pupae was found in different concentrations of NaF. Further, flies survived in 1.0 ppm of NaF mixed with 50 mM ascorbic acid. It was concluded that L. Ascorbic acid helped to alleviate fluoride toxicity at least partially.*

Keywords: *Drosophila melanogaster, Sodium Fluoride, L. Ascorbic Acid.*

Vanshika Singh

B.Sc. III year, Zoology (Hons.),
Session : 2015-2018, Patna Women's College,
Patna University, Patna, Bihar, India

Raushni Choudhary

B.Sc. III year, Zoology (Hons.),
Session : 2015-2018, Patna Women's College,
Patna University, Patna, Bihar, India

Sanjana Shah

B.Sc. III year, Zoology (Hons.),
Session : 2015-2018, Patna Women's College,
Patna University, Patna, Bihar, India

Shahla Yasmin

Head, Dept. of Zoology, Patna Women's College,
Bailey Road, Patna-800 001, Bihar, India
E-mail : shahla_apex@yahoo.co.in

Introduction:

Drosophila melanogaster has a life-span of about 30 days at 29°C (84°F) and the developmental period for *Drosophila melanogaster* varies with the temperature (Thompson and Woodruff, 1981). It takes 8-9 days to complete its life cycle. There are four different stages in the life cycle of *Drosophila melanogaster*, i.e. egg, larva, pupa and adult. The eggs hatch into first instar larvae which moult twice into second and third instar larvae. Third instar larvae pupate and finally metamorphose into adult flies.

Drosophila melanogaster is popularly used as a model to study toxic potential of any chemical (Jatav et al., 2011). Many studies have been conducted using *Drosophila melanogaster* in laboratory conditions to reveal well defined effects of various insecticides and pesticides on the life cycle, hatchability and emergence of the fly (Nazir et al., 2001; Nazir et al., 2003, Gupta et al., 2005; Das and Podder 2010).

Human activities as well as climatic variations have led to global changes which affect the organisms exposed (Harrison and Harrison, 2006). It has been reported that fluoride containing chemicals like cryolite and NaF can cause alterations in the compound eye morphology and