PATNA WOMEN'S COLLEGE 1940

IRIS
Journal for Young Scientists
ISSN 2278 – 618X **(Print)**
ISSN 2278 – 6384 **(Online)**
© Patna Women's College, Patna, India
http://www.patnawomenscollege.in/journal

Learning and memory assay in native *Drosophila melanogaster*

• **Prashi Soumya** • **Kumari Sushmita** • **Vandana Kumari**
• **Shahla Yasmin**

Received : November 2015
Accepted : March 2016
Corresponding Author : Shahla Yasmin

Abstract : *Drosophila melanogaster is one of the most valuable organisms in biological research. It serves as an efficient in vivo tool for the analysis of multiple human diseases. The present study aimed to test the effects of ultraviolet radiation on the larvae of exposed adult Drosophila, and also to test whether the learning capacity is inherited in the consecutive generations of larvae (epigenetic memory). Fruit flies were trapped and transferred into standard cornmeal medium bottles. Then 2nd Instar larvae were harvested to perform the learning and memory assay using banana essence of the dilution 10^{-2} as odorant. The results showed that the larvae of native flies were almost 50% more sensitive to olfactory conditioning as compared to the larvae of flies exposed to ultraviolet rays. Further, exposure to ultraviolet radiation impaired the learning and memory ability of Drosophila larvae in successive generations, which shows the inheritance of acquired character.*

Keywords: *Drosophila melanogaster, larvae, ultraviolet radiation, learning, memory.*

Prashi Soumya
B.Sc. III year, Zoology (Hons.),
Session : 2013-2016, Patna Women's College,
Patna University, Patna, Bihar, India

Kumari Sushmita
B.Sc. III year, Zoology (Hons.),
Session : 2013-2016, Patna Women's College,
Patna University, Patna, Bihar, India

Vandana Kumari
B.Sc. III year, Zoology (Hons.),
Session : 2013-2016, 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 :

Olfactory responses of *Drosophila* undergo pronounced changes after eclosion. The flies develop attraction to odors to which they are exposed and aversions to other odors. Since the mammalian and insect olfactory systems are similar (Scherer et al., 2003), *Drosophila* can be used as a simple model for olfaction and olfactory learning. The brain of adult *Drosophila,* however, is complex as compared to their larvae. *Drosophila* larvae possess only 21 pairs of olfactory receptor neurons, compared with the 1300 pairs of olfactory receptor neurons in the adult fly (Scherer et al., 2003). Larvae were chosen for work because the larvae have adult-like olfactory system and provide evidence for olfactory learning in individually assayed *Drosophila* larvae. In the present study *Drosophila* larvae were used for their learning and memory assay.