



Effect of arsenic trioxide on *Drosophila melanogaster* and possible protection with *Moringa oleifera*

• Annie George • Saima Irshad • Soniya Bhagat • Shahla Yasmin

Received : March 2021

Accepted : July 2021

Corresponding Author : **Shahla Yasmin**

Abstract: This study was conducted to assess the effect of sublethal concentration of arsenic trioxide on the reproductive output, survival of *Drosophila melanogaster* and possible remedial action of *Moringa oleifera* on the toxicity caused by arsenic trioxide. The result showed that there was significant fall in the number of 3rd instar larvae, pupae and flies, in the different concentration of arsenic trioxide. 0.5 ppm arsenic trioxide was lethal for the flies, and 0.25 ppm was found to be the sublethal concentration. When moringa extract was mixed in the medium containing 0.5 ppm arsenic trioxide, flies survived and in 0.25 ppm the number of dead flies decreased. It was concluded that *Moringa oleifera* extract helped to counteract the toxic effect of arsenic trioxide in *Drosophila melanogaster*.

Keywords : *Drosophila melanogaster*, Arsenic trioxide, *Moringa oleifera*.

Introduction:

Arsenic toxicity causes global health problem affecting many millions of people. Contamination is caused by arsenic from natural geological sources leaching into aquifers contaminating the drinking water. Arsenic contamination in groundwater may also occur due to mining and other industrial processes. Arsenic exerts its toxicity by inactivating upto 200 enzymes, especially those involved in cellular energy pathways, DNA synthesis and repair. (Ratnaike, 2003).

The fruitfly *Drosophila melanogaster* is one of the most intensively studied organisms in biology and serves as a model system for the investigation of many developmental and cellular processes common to higher eukaryotes, including humans. (Adam et al., 2000). About 75% of human disease-causing genes are believed to have a functional homolog in *Drosophila melanogaster* (Pandey et al., 2011).

Moringa oleifera leaves contain essential amino acids, carotenoids and components with

Annie George

B.Sc. III Year, Zoology (Hons.),
Session : 2018–2021, Patna Women's College
Patna University, Patna, Bihar, India

Saima Irshad

B.Sc. III Year, Zoology (Hons.),
Session : 2018–2021, Patna Women's College
Patna University, Patna, Bihar, India

Soniya Bhagat

B.Sc. III Year, Zoology (Hons.),
Session : 2018–2021, Patna Women's College
Patna University, Patna, Bihar, India

Shahla Yasmin

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