National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Exploring the therapeutic efficacy of a novel nano-antioxidant for the amelioration of oxaliplatin mediated toxicity in D. melanogaster
Speaker	: Lopamudra Mishra (Rollno : 522ls2007)
Supervisor	: Prof. Monalisa Mishra
Venue	: LS seminar room
Date and Time	: 15 May 2024 (10AM)
Abstract	: Despite the effectiveness and widespread usage of platinum-based compounds as chemotherapeutic treatments, 20-30% of patients have sensory peripheral neuropathy as a dose-limiting and long-term adverse effect. Studies from rodent dorsal root ganglion neurons (DRG) suggest the adverse effect of the drug in binding and damaging the neuronal DNA, ultimately leading to apoptosis. However, genetic manipulation is very difficult, time-consuming, and costly to study the mechanisms of this phenomenon in rodent model systems. Drosophila melanogaster has been considered an excellent model organism due to its brief generation time, low maintenance costs, high fecundity, and well-characterized genome. It has been extensively used to study neurological disorders, DNA damage, oxidative stress, and apoptosis-like mechanisms homologous to mammalian systems. We, therefore aimed to explore the toxicity of oxaliplatin in adult Drosophila. Adult Drosophila was exposed to 25, 50, 100, 200, 400, and 600 &mug/ml oxaliplatin for 8 days and monitored for changes in developmental cycle, survivability, and nociception. Brain, Ovaries, and Malpighian tubules were harvested from oxaliplatin treated flies and apoptosis was detected. Oxaliplatin-treated flies also showed an increase in ROS production, oxidative stress, and behavioral defects. Developing an innovative therapeutic strategy to mitigate the toxicity of oxaliplatin is a crucial need. The objective of the present study is to create an ideal nano-particle that can mitigate the negative impact of this drug.