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Nonylphenol Exposure Induces Cellular and Organismal Toxicity in *Drosophila melanogaster*

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Depicting the effect of environmental toxicants at the cellularand organismal levels are critical aspects of human risk assessment. The endocrine disruptor nonylphenol has been widely used in industry, agriculture and daily requirements. The presence of nonylphenol residue in water and food may cause adverse effects on non-target organisms. Therefore, the effects of nonylphenol at the cellular and organismal levels were examinedin *Drosophila melanogaster* exposed during the larval development. The Drosophila larvae were exposed to three different concentrations (0.05 µg/mL, 0.5 µg/mL, and 5.0 µg/mL) and adult emergence rate, developmental time, body weight, locomotory behaviour, heat shock proteins, oxidative stress, Reactive Oxygen Species (ROS) and gut microbial population were determined. At the cellular level, nonylphenol exposure showed time and concentration dependent changes in heat shock protein expression, ROS levels and oxidative stress markers. Moreover, nonylphenol exposure also showed a reduction in number and diversity of the total commensal gut microbial population. Propagation of this cellular effect resulted at the organismal level, i.e., delay and reduced emergence, reduction in body weight of male and female organism and altered locomotor behaviour. These findings suggest the nonylphenol exposure causes toxicity at the cellular and organismal levels and *Drosophila* can be used as an alternative animal model to study environmental chemical induced toxicity. However, the role of nonylphenol altered microbial dynamics in cellular and organismal toxicity is an open question.

Biography:

Ms. Shiwangi Dwivedi is a Ph.D. student from Division of Environmental Health and Toxicology, Nitte university Centre for Science Education and Research, India. Currently, she is working on project to decipher interaction between host immune system, microbiome and environmental toxicants using *Drosophila melanogaster* as model system. Her research interests are focused on toxicogenomics, xenobiotic inducing cellular and organismal level toxicity, molecular mechanism of toxicity, cellular immune response, toxicants induced metabolism disorders, gut microbiome and stress response toxicology.