Serbian Biochemical Society
Tenth Conference

with international participation

24.09.2021. Kragujevac, Serbia

"***Biochemical Insights into Molecular Mechanisms***"

Testicular toxicity induced by chlorpyrifos and imidacloprid: Comparative study

Marija Milošević[1*], Miloš Matić[1], Milica Paunović[1], Jelena Gavrić[2], Ana Obradović[1], Branka Ognjanović[1]

[1]*Department of Biology and Ecology, Faculty of Science, University of Kragujevac, Kragujevac; Serbia*
[2]*Institute for Biological Research "Siniša Stanković", University of Belgrade, Belgrade; Serbia*

[*]*e-mail: marija.milosevic@pmf.kg.ac.rs*

Various toxicants from the environment could affect male reproductive system. Toxic effects of pesticides on non-target species have become a global problem. In the present study, testicular toxicity of two widely used insecticides chlorpyrifos and imidacloprid was evaluated. Male rats were divided in three groups, control and experimental groups treated with chlorpyrifos (35 mg/kg b.w.) and imidacloprid (70 mg/kg b.w.) two times a week for one month via gavage. The mortality was noted throughout the experiment in group treated with chlorpyrifos. The exposure of chlorpyrifos and imidacloprid both stimulated superoxide dismutase and catalase activities in testis. No significant changes were found in activities of glutathione peroxidase and glutathione reductase in both experimental groups, while glutathione s-transferase was significantly higher in chlorpyrifos group. Lipid peroxidation was induced in experimental groups but was more pronounced in the group administered with chlorpyrifos. Reduced glutathione and the activity of cholinesterase did not significantly differ among the groups. The concentration of vitamin C was higher in rats treated with imidacloprid. The results from the present study showed that chlorpyrifos and imidacloprid both induced oxidative stress in rat testicular tissue. The use of these insecticides should be limited due their deleterious effects on the living world, including humans and should be replaced with less harmful insecticides.

Acknowledgements

This work was supported by the Serbian Ministry of Education, Science and Technological Development (Agreement No. 451-03-9/2021-14/200122).