

**13<sup>th</sup>** INTERNATIONAL  
**CONGRESS**  
OF THE SERBIAN SOCIETY  
**OF TOXICOLOGY**



**1<sup>st</sup> TOXSEE**  
**REGIONAL**  
**CONFERENCE**

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Present and Future of toxicology: Challenges and opportunities

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**10 - 12 May, 2023 Belgrade**

**electronic**

**ABSTRACT**  
**BOOK**

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## DEAR COLLEAGUES, DEAR FRIENDS,

We are delighted to greet you on the **13th International Congress of the Serbian Society of Toxicology & 1. TOXSEE Regional Conference - Present and Future of toxicology: challenges and opportunities**, organized in Belgrade from 10-12 May 2023.

Five years after our last international Congress we gathered in Belgrade, to further promote contemporary toxicology, in the broadest sense of meaning, as a response to the new challenges requiring innovative approaches and solutions, as it is understood in the third decade of the XXI century.

Initial concept, to blend the top scientific level in toxicology with the potentials of its' use in broad array of clinical and other domains, proved to be right. Line-up of more than 70 first class international and regional faculties as well as best Serbian scientists and toxicology professionals in all related domains fully justify the approach. Moreover, interest and presence of more than 250 colleagues from Serbia and region witness that our professional community has recognized the approach taken and shown vast interest.

The Serbian Society of Toxicology is committed to innovation and creativity in research and education, in cooperation with collegial associations and institutions in Serbia and abroad. As a regional leader, we developed and inaugurated the regional brand TOXSEE, with the idea to gather as much as possible expertise and know-how from the region and Europe, to capture knowledge, share experience and exchange practical skills with colleagues who deal with toxicology problems daily.

Time imposes on us the need to integrate science, top knowledge and daily practice in a quality and efficient way, to contribute to the better health of the society as a whole in the most purposeful manner. Therefore, a thematic and functional connections with domains of emergency medicine, general medicine, paediatrics, ecology, in addition to already standard toxicological disciplines i.e. clinical, forensic, occupational, and experimental toxicology have been enhanced.

We are glad to host you in a pleasant atmosphere of Belgrade in mid-May, to benefit from the attractive and dynamic program, exchange knowledge, and, equally important, to refresh existing and establish new contacts with colleagues and friends, while enjoying our hospitality and cherish the moment in one of the best partying cities of Europe.

### YOU ARE MOST WELCOME!!!



**Prof. dr Petar Bulat**

- President of the STC
- President of the 13th STC Congress

*Petar Bulat*



**Prof. dr Biljana Antonijević**

- President of the CSC
- of the 13th STC Congress

*B. Antonijević*



**Prof. dr Predrag Vukomanović**

- President of the COC
- of the 13th STC Congress

*P. Vukomanović*

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**CONGRESS**  
**PROGRAM**



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# PARTICIPANTS

## abstracts

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## EFEKAT VISOKIH DOZA MIKOTOKSINA ZEARALENONA NA LARVE BRAŠNENOG CRVA *TENEbrio MOLITOR* L.

ECOTOXICOLOGY

Milena Janković-Tomanić<sup>1</sup>, Jelena Vranković<sup>1</sup>, Branka Petković<sup>1</sup>, Vesna Perić-Mataruga<sup>1</sup>

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*Tenebrio molitor* se smatra štetočinom uskladištenih žitarica i proizvoda od žitarica, ali i kao važan dodatak u ishrani životinja i ljudi. Važno je istaći da su *T. molitor* larve osjetljive na prisustvo mikotoksina u okruženju, menjajući ponašanje i vrednosti biohemijskih parametara. Fungalni toksin zearalenon (ZEA) je korišćen za procenu uticaja na oksidativni stres i lokomotornu aktivnost larvi brašnenog crva, *T. molitor*. Cilj ovog istraživanja je bio da se ispita uticaj visokih doza mikotoksina ZEA (10 i 20 mg/kg) u hrani na aktivnost enzima superoksid dismutaze (SOD), katalaze (CAT) i glutation S-transferaze (GST), kao i na parametre lokomotorne aktivnosti: pređeni put, vreme kretanja i prosečnu brzinu kretanja larvi *T. molitor*.

Rezultati ovog istraživanja su pokazali da prisustvo ZEA u hrani u koncentracijama od 10 i 20 mg/kg značajno povećava specifičnu aktivnost SOD, CAT i GST. Takođe, uticalo je i na lokomotornu aktivnost larvi tj. pređeni put i vreme kretanja su bili značajno niži kod larvi izloženih 10 i 20 mg/kg ZEA, dok se prosečna brzina kretanja nije značajno menjala.

Prisustvo ZEA dovodi do značajnih promena u fiziologiji i ponašanju larvi *T. molitor* i može biti korisno u ranom otkrivanju kontaminacije hrane ovim opasnim mikotoksinom.

**KLJUČNE REČI:** *T. molitor*, mikotosin ZEA, antioksidativni



## THE EFFECT OF HIGH DOSES OF THE MYCOTOXIN ZEARELENONE ON *TENEBRIO MOLITOR* L. LARVAE

ECOTOXICOLOGY

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*Tenebrio molitor* is considered a pest of stored grains and grain-based products, but also as an important supplement in animal and human nutrition. It is important to point out that *T. molitor* larvae are sensitive to the presence of mycotoxins in the environment, changing the behavior and some biochemical parameters. Mycotoxin zearalenone (ZEA) was used to assess the effect on the induction of oxidative stress and behavior in *T. molitor* larvae. The aim of this research was to examine the effect of high doses of mycotoxin ZEA (10 and 20 mg/kg) in feed on the activity of the enzymes superoxide dismutase (SOD), catalase (CAT), and glutathione S-transferase (GST), as well as on the parameters of locomotor activity: travel distance, time in movement, and average speed while in motion in *T. molitor* larvae.

The results of this study showed that the presence of ZEA in feed at concentrations of 10 and 20 mg/kg significantly increased the specific activity of SOD, CAT, and GST. It also affected the locomotor activity of the larvae, i.e. travel distance and time in movement were significantly lower in larvae exposed to 10 and 20 mg/kg ZEA, while average speed did not change significantly. The presence of ZEA leads to significant changes in the physiology and behavior of *T. molitor* larvae and can be useful in the early detection of food contamination with this dangerous mycotoxin.

**KEYWORDS:** *T. molitor*, mycotoxin ZEA, antioxidant