

13th INTERNATIONAL
CONGRESS
OF THE SERBIAN SOCIETY
OF TOXICOLOGY



1st TOXSEE
REGIONAL
CONFERENCE

Present and Future of toxicology: Challenges and opportunities



10 - 12 May, 2023 Belgrade

electronic

ABSTRACT
BOOK

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13th INTERNATIONAL
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Present and Future of toxicology: Challenges and opportunities



10 - 12 May, 2023 Belgrade

CONGRESS
PROGRAM



SCIENTIFIC COMMITTEE

Biljana Antonijević - Serbia / President

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Slavica Vučinić Serbia

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Zorica Bulat Serbia

Vesna Kilibarda Serbia

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Andrea Pirković Serbia

Branislava Srdenović Čonić ... Serbia

Milena Stošić Serbia

WEDNESDAY / 10th MAY

PRE-CONGRESS MINI-SYMPOSIUM



HALL 1 ~ DONJI DORČOL

16:00-17:30

• **Danijela Đukić-Čosić**

Education of the general population about toxicity: MeeTox project

OPENING CEREMONY



HALL 1 ~ DONJI DORČOL

18:00

~

18:15

WELCOME ADDRESS

- **Prof. dr Petar Bulat**, *President of the Serbian Society of Toxicology*
- **Prof. dr Biljana Antonijević**, *President of the Scientific Committee*



PLENARY SESSION

18.15-19:00

• **Akademician Prof. dr Vladimir Kostić**

MPTP-Benefits of one toxin

19:00-19:45

• **José E. Manautou**

Multidrug resistance protein-4 (Mrp4) at the intersection of the liver- adipose tissue axis

19:45 - 22:00

WELCOME RECEPTION

THURSDAY / 11th MAY



PLENARY LECTURE



HALL 1 ~ DONJI DORČOL

Chairs: : Slavica Vučinić, Danijela Đukić-Čosić

9:00-9:40

• **Leonardo Trasande**

Endocrine disrupting chemicals: mainstream recognition of health effects and policy implications

9:40-9:45



DISCUSSION

9:45-10:00



Coffee break

SCIENTIFIC SESSION

10:00

-

12:00

**IMPACT OF ENVIRONMENTAL
POLLUTANTS ON HUMAN HEALTH:
NEW CHALLENGES**

Chairs: Slavica Vučinić,
Danijela Đukić-Čosić

**IS OCCUPATIONAL TOXICOLOGY
TODAY PROFESSIONAL ONCOLOGY**

Chairs:
Petar Bulat, Metoda Dodič Fikfak

HALL 1 ~ DONJI DORČOL

HALL 2 ~ SHONDA 4

10:00-10:20

• **Emanuela Corsini**

New insights on PFAS immunotoxicity

• **Petar Bulat**

Occupational toxicology in Serbia
future directions of development

10:20-10:40

• **Pinar Uysal-Onganer**

Role of cadmium and nickel on
selected microRNA expression
in pancreatic ductal adenocarcinoma

• **Metoda Dodič Fikfak**

Exposure to asbestos and its effect
on the health of workers in the
Slovenian cement-asbestos industry

HALL 1 ~ DONJI DORČOL

HALL 2 ~ SHONDA 4

10:40-11:00

• **Aleksandra Buha Đorđević**
Investing the role of exposome
in human endocrine health:
DecodExpo project results

• **Cveta Georgieva**

Aerosols and their organic extracts
as a result of the utilization
of alternative energy carriers -
benefits and toxicological risk

11:00-11:20

• **Milena Kataranovski**
Immunotoxicological
effects of cadmium

• **Roberto Madeddu**

Cadmium and gemcitabine
relationship in human pancreatic
cancer cells

11:20-11:40

• **Kamil Musilek**
Challenges and promises in reactivation
of cholinesterases inhibited by
organophosphorus agents

• **Stefan Mandić Rajčević**

Occupational exposure to nanomaterials:
a new public health concern?

11.40-12.00

 DISCUSSION

 DISCUSSION

12:00-13:30

 LUNCH



PLENARY LECTURE



HALL 1 ~ DONJI DORČOL

Chairs: : **Slobodan Nikolić, Zorica Bulat**

13:30-14:10

• **Predrag Minić**

Ambient air pollution and respiratory morbidity in children

14:10-14:15

 DISCUSSION

14:20-16:20

SCIENTIFIC SESSION

FORENSIC TOXICOLOGY IN THE SERVICE OF LIFE

Chairs:

Slobodan Nikolić,
Zorica Bulat

CHILDREN IN THE WORLD OF CHEMICALS

Chairs:

Vladislav Vukomanović,
Aleksandra Buha Đorđević

YOUNG RESEARCHERS

Chairs:

Evica Antonijević Miljković,
Dubravka Rašić

HALL 1 ~ DONJI DORČOL

HALL 2 ~ SHONDA 4

HALL 3 ~ SHONDA 2

14:20
-
14:40

• **Tomaž Zupanc**

Organization of the forensic toxicology service in Slovenia - disadvantages and advantages

• **Snežana Ristić**

Child poisoning in Serbia – 20 years of experience of the Institute for mother and child health care of Serbia "Dr. Vukan Čupić"

14:20
-
14:30

• **Katarina Baralić**

Three lines of evidence of the hepatotoxicity of a mixture containing phthalates and bisphenol A: in silico and two in vivo models

14:30
-
14:40

• **Dragana Vukelić**

Oxidative stress induced by low doses of lead: a subacute toxicity study in Wistar rats and benchmark modeling

14:40
-
15:00

• **Đorđe Alempijević**

Clinical forensic toxicology

• **Vladislav Vukomanović**

Verapamil poisoning

14:40
-
14:50

• **Katarina Živančević**

Neurotoxicity of lead, cadmium, mercury and arsenic low dosed mixtures relevant to environmental exposure

14:50
-
15:00

• **Dragica Božić**

Predicting toxic effects of an immunomodulator, Sulforaphane: bioinformatic analysis

HALL 1 ~ DONJI DORČOL	HALL 2 ~ SHONDA 4	HALL 3 ~ SHONDA 2
<p>15:00 - 15:20</p> <p>• Aleksandra Repić Psychoactive substances in wastewater</p>	<p>• Vojislav Parezanović Poisonings by psychoactive substances in children</p>	<p>15:00 - 15:10</p> <p>• Đurđica Marić The relationship between nickel exposure and thyroid dysfunction - results of a human biomonitoring study</p>
<p>15:20 - 15:40</p> <p>• Vera Lukić Paraffin molds of liver tissue as an alternative sample for toxicological analysis</p>	<p>• Ivana Kitić Poisoning of children with corrosive agents</p>	<p>15:10 - 15:20</p> <p>• Nikola Stojilković Effect of lead and polychlorinated- biphenyls mixture on sperm cells and serum level of testosterone in rats</p>
		<p>15:20 - 15:30</p> <p>• Biljana Radović Assessment of lead and polychlorinated biphenyls mixture toxic effects on redox status in rat kidneys</p>
		<p>15:30 - 15:40</p> <p>• Nina Umičević Oxidative stress induced by low doses of lead: a subacute toxicity study in Wistar rats and benchmark modeling</p>
<p>15:40 - 16:00</p> <p> DISCUSSION</p>	<p> DISCUSSION</p>	<p>15:40 - 16:00</p> <p> DISCUSSION</p>
<p>16:00 - 16:20</p> <p> <i>Coffee break</i></p>	<p> <i>Coffee break</i></p>	

16:20

-

18:00

SCIENTIFIC SESSIONS

DEBATE

Analytical toxicology is a powerful tool and a great challenge

Moderators:

Vesna Kilibarda, Dijana Đurović

HALL 1 ~ DONJI DORČOL

HALL 2 ~ SHONDA 4

HALL 3 ~ SHONDA 2

16:20

-
16:40

• **Danica Đukić**
Toxicological analysis in forensic medicine: the importance of alternative samples

16:40

-
17:00

• **Aleksa Leković**
Chirality of psychoactive substance

17:00

-
17:20

• **Vladimir Živković**
Sodium-nitrite poisoning – forensic significance and interpretation of the results

17:20

-
17:40

• **Slobodan Nikolić**
Toxicological analysis of subdural hematoma – interpretation of results and forensic implications

17:40

-
18:00

DISCUSSION

• **Jovana Putnik**
Acute kidney damage caused by bismuth succinate intoxication

• **Gordana Kovačević**
Botulism in children - diagnostic challenges

• **Miloš Kuzmanović**
Von Munchausen syndrome - warfarin poisoning

• **Borko Gobeljić**
Benzodiazepine poisoning in children - a five-year experience

DISCUSSION

16:20

-
18:00

• **Dijana Đurović**
Advantages and limitations of liquid and gas chromatography in toxicological analysis

• **Snežana Đorđević**
Liquid chromatography - a powerful weapon in the screening of drugs and psychoactive substances

• **Maja Vujović**
Gas Chromatography – The Application in Forensic Toxicology

9:00 ~ 18:00

POSTER SESSION 1

HALL ~ GALERIJA

18:00 - 19:30 SST Assembly

📍 HALL 1 ~ DONJI DORČOL

20:30 - 23:00 GALA DINNER

RESTAURANT TRI ŠEŠIRA, SKADARLIJA

FRIDAY / 12th MAY



PLENARY LECTURE



HALL 1 ~ DONJI DORČOL

Chairs: : Biljana Antonijević, Miloš Stojiljković

9:00-9:40

• **Richard Brown**

Chemical risk assessment: change, challenges and controversy

9:40-9:45



DISCUSSION

9:45-10:00



Coffee break

SCIENTIFIC SESSION

10:00

-

12:00

NEW TRENDS IN TOXICOLOGICAL RESEARCH

Chairs: Biljana Antonijević,
Miloš Stojiljković

HALL 1 ~ DONJI DORČOL

CHALLENGES AND MODERN APPROACHES IN CLINICAL TOXICOLOGY

Chairs:
Slavica Vučinić, Nataša Perković-Vukčević

HALL 2 ~ SHONDA 4

10:00-10:20

• **Miloš Stojiljković**

Novel experimental achievements in therapy of organophosphate intoxications

• **Niko Bekjarovski**

Six years after legalization of cannabis for medical use. Did we make a mistake?

10:20-10:40

• **Danijela Đukić-Čosić**

Opportunities and limitations of toxicogenomic data analysis – our experiences

• **Jasmina Jović-Stošić**

Toxicity of household products: experience of National Poison Control Centre

11:00-11:20

• **Ksenija Durgo**

Equivocal effect of bioactive compounds from plants

• **Hulya Turkan**

Latest knowledge on opioids polymorphism in pain management: The way forward

11:00-11:20

• **Marijana Ćurčić**

Quantifying interactions in the mixture toxicity studies - BDE-209 and cadmium

• **Nataša Perković-Vukčević**

Factors affecting benzodiazepines elimination, clinical features and outcome in elderly people acutely poisoned with benzodiazepines

11:00-11:20

• **Evica Antonijević Miljaković**

Enzyme immobilization as a strategy towards efficient and sustainable determination of cholinesterase inhibitors and reactivators

• **Marko Antunović**

Gabapentinoid abuse in Serbia - are we following the global trend?

11:40-12:00

 **DISCUSSION**

 **DISCUSSION**

12:00-13:30



LUNCH



PLENARY LECTURE



HALL 1 ~ DONJI DORČOL

Chairs: : **Milena Kataranovski, Aleksandra Buha Đorđević**

13:30-14:10

• **Demetrios Kouretas**

Emerging concepts and challenges in nanotoxicology: the role of oxidative stress in nanomaterial - induced toxicity

14:10-14:15

 **DISCUSSION**

SCIENTIFIC SESSION

14:20

-

16:20

CHEMICALS ARE ALL AROUND US

Chairs: Milena Kataranovski,
Aleksandra Buha Đorđević

EMERGENCY/GENERAL MEDICINE

Chairs: Marko Ercegovac,
Jasmina Jović Stošić

HALL 1 ~ DONJI DORČOL

HALL 2 ~ SHONDA 4

14:20-14:40

• **Nursen Basaran**

Adverse consequences of adulteration of herbal products

• **Marko Ercegovac**

Endogenous and exogenous intoxications in emergency neurology

14:40-15:00

• **Doris Marko**

Alternaria mycotoxins as a challenge for risk assessment

• **Dušica Gujaničić**

Poisoning by psychoactive substances - early hospital treatment in an emergency center

15:00-15:20

• **Dragica Brkić**

The status of pesticide active substances in the European Union and further perspectives of their withdrawal

• **Bojana Uzelac**

ECG changes in poisoning with drugs and other xenobiotics

15:20-15:40

• **Emilija Brdarić**

Gut microbiota as a target of toxic compounds

• **Marina Đikić**

Early hospital treatment of overdose with internist therapy: What is urgent and what is more urgent?

15:40-16:00

• **Melita Vidaković**

The various aspects of epigenetics in toxicology research

• **Dragana Trifunović Balanović,**
• **Marija Lazarević**

General principles of emergency treatment of poisoning in a general medicine doctor's practice – challenges and impediments

16:00-16:20

DISCUSSION

DISCUSSION

16:20-16:40

Coffee break

Coffee break

SCIENTIFIC SESSION

16:40

-

18:20

VETERINARY/EXPERIMENTAL TOXICOLOGY

Chairs:

Vitomir Ćupić, Dragica Brkić

ROUND TABLE - DISSEMINATION OF SCIENCE IN TOXICOLOGY

Moderators:

Marijana Ćurčić, Javier Esteban

HALL 1 ~ DONJI DORĆOL

HALL 2 ~ SHONDA 4

16:40

-

17:00

• Vitomir Ćupić

For and against the use of marijuana (cannabis) in veterinary medicine

17:00

-

17:20

• Paul Ziegler

Progress in ecotoxicity testing with duckweeds

17:20

-

17:40

• Saša Ivanović

Neurotoxic effect of Vipera ammodytes venom on the rat isolated diaphragm model

17:40

-

18:00

• Sunčica Borozan

Biomarkers of oxidative stress in the liver of rats treated with diazinon

18:00

-

18:20

• Dejana Ćupić Miladinović

Vitamin B1 as a potential antidote in the treatment of the Japanese quail intoxicated with chlorpyrifos

16:40

-

18:20

• Javier Esteban, Gonca Cakmak, Ksenija Durgo, Marijana Ćurčić

Topic 1 -

Toxicology dissemination by talks/radio/TV/Instagram

Topic 2 -

Internationalisation of the higher education in Toxicology

9:00 ~ 18:00

POSTER SESSION 2



HALL ~ GALERIJA

18.20-18.30 CLOSING CEREMONY



HALL 1 ~ DONJI DORĆOL



INVITED LECTURERS abstracts

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Present and Future of toxicology: Challenges and opportunities



VETERINARSKA EKSPERIMENTALNA TOKSIKOLOGIJA / VETERINARY EXPERIMENTAL TOXICOLOGY

ZA I PROTIV PRIMENE MARIHUANE (KANABISA) U VETERINARSKOJ MEDICINI

Vitomir Ćupić¹, Saša Ivanović², Sunčica Borozan², Indira Mujezinović³,
Andrea Prevendar-Crnić⁴, Mirjana Bartula¹, Romel Velev⁵,
Dejana Ćupić Miladinović², Arturo Anadon⁶

1 Univerzitet Metropolitan u Beogradu – Fakultet za primenjenu ekologiju „Futura“,
Beograd, **Srbija**

2 Univerzitet u Beogradu – Fakultet veterinarske medicine, Beograd, **Srbija**

3 Univerzitet u Sarajevu – Veterinarski fakultet, Sarajevo, **Bosna i Hercegovina**

4 Sveučilište u Zagrebu – Veterinarski fakultet, Zagreb, **Hrvatska**

5 Univerzitet Sv. Kiril i Metodije u Skoplju – Veterinarski fakultet, Skoplje, **Severna Makedonija**

6 Univerzitet „Complutense de Madrid“ – Fakultet veterinarske medicine,
Katedra za toksikologiju, Madrid, **Španija**

Poznato je da se marihuana (i proizvodi od nje), danas sve više koristi, kako za medicinske, tako i rekreativne svrhe kod ljudi. U skladu sa ovim jeste i činjenica da je poslednjih godina značajno poraslo i naučno interesovanje za primenu marihuane. Najbolji dokaz za to je i broj citata u PubMedu, koji je u periodu od 2000 do 2002 iznosio svega 40, da bi u periodu od 2014. do 2016. porastao na 458, a danas je još veći. U Severnoj Americi i Evropi su mnoge zemlje donele zakone koji dozvoljavaju medicinsku upotrebu određenih proizvoda proizvedenih od kanabisa kod ljudi, a neke zemlje su donele zakone koji dozvoljavaju i rekreativnu upotrebu.

Međutim, sa porastom ove primene, rastao je i broj slučajeva toksikoza kod kućnih ljubimaca, nastalih usled trovanja marihuanom. Ovaj problem je postao još veći kada su vlasnici životinja u želji da pomognu svojim ljubimcima, kod raznih stanja i poremećaja pokušali iste da izleče, upravo primenom proizvoda od marihuane. Već dugo vremena vlasnici životinja širom sveta postavljaju pitanja:

„Da li su marihuana i njeni proizvodi legalni, sigurni i efikasni za lečenje raznih poremećaja kod životinja?“.



VETERINARSKA EKSPERIMENTALNA TOKSIKOLOGIJA / VETERINARY EXPERIMENTAL TOXICOLOGY

Imajući ovo u vidu, cilj ovog rada je da se naše kolege (kroz prikaz različitih vrsta marihuane i njenih proizvoda, kao i primera primene istih kod životinja kroz istoriju, te postojeće zakonske regulative i propisa), bar malo upoznaju sa primenom istih (kao lekova i/ili suplemenata) u kliničkoj veterinarskoj praksi, ali i sa mogućim trovanjima i (usled toga) potrebnim upozorenjima vezanim za njihovu primenu.

KLJUČNE REČI: marihuana (kanabis), primena, veterinarska medicina, terapija, trovanja



FOR AND AGAINST THE USE OF MARIJUANA (CANNABIS) IN VETERINARY MEDICINE

Vitomir Ćupić¹, Saša Ivanović², Sunčica Borozan², Indira Mujezinović³,
Andrea Prevendar-Crnić⁴, Mirjana Bartula¹, Romel Velev⁵,
Dejana Ćupić Miladinović², Arturo Anadon⁶

1 Metropolitan university in Belgrade - Faculty of applied ecology "Futura", Belgrade, **Serbia**

2 University of Belgrade - Faculty of veterinary medicine, Belgrade, **Serbia**

3 University of Sarajevo - Faculty of veterinary medicine, Sarajevo, **Bosnia and Herzegovina**

4 University of Zagreb - Faculty of veterinary medicine, Zagreb, **Croatia**

5 University of St. Cyril and Methodius in Skopje - Veterinary faculty, Skopje, **North Macedonia**

6 Complutense University of Madrid - Faculty of veterinary medicine,
Department of toxicology, Madrid, **Spain**

It is known that marijuana (and its products) is used more and more today, both for medical and recreational purposes by people. In line with this is the fact that scientific interest in the use of marijuana has grown significantly in recent years. The best evidence for this is the number of citations in PubMed, which in the period from 2000 to 2002 was only 40, and in the period from 2014 to 2016, it increased to 458, and today it is even higher. In North America and Europe, many countries have passed laws allowing the medical use of certain cannabis products in humans, and some countries have passed laws allowing recreational use as well. However, with the increase in this application, the number of cases of toxicosis in pets, caused by marijuana poisoning, also increased.

This problem became even greater when animal owners, in their desire to help their pets, tried to cure them of various conditions and disorders, precisely by using marijuana products. For a long time, animal owners around the world have asked the question: "Are marijuana and its products legal, safe and effective for treating various disorders in animals?". Bearing this in mind, the aim of this paper is that our colleagues (through the presentation of different types of marijuana and its products, as well as examples of their use in animals throughout history, and the existing laws and regulations), become a bit familiar with the application of the same (as medicines and/or supplements) in clinical veterinary practice, but also with possible poisonings and (as a result) necessary warnings related to their use.

KEY WORDS: marijuana (cannabis), application, veterinary medicine, therapy, poisoning



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