

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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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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PROCENA ANTIOKSIDATIVNOG, CITOTOKSIČNOG I GENOTOKSIČNOG EFEKTA ETARSKOG ULJA CIMETA I NJEGOVE EMULZIJE

GENOTOXICOLOGY
AND CARCINOGENICITY

Tea Ganić¹, Stefana Cvetković¹, Stefana Vuletić¹, Tatjana Stević²,
Magdalena Stevanović³, Nina Tomić³, Biljana Nikolić¹, Dragana Mitić-Čulafić¹

1 *Univerzitet u Beogradu – Biološki fakultet, Beograd Srbija*

2 *Institut za proučavanje lekovitog bilja „Dr Josif Pančić“, Beograd, Srbija*

3 *Institut tehničkih nauka SANU, Beograd, Srbija*

Cimet je jedna od najpoznatijih aromatičnih biljaka, koje je najčešće korišćena kao začim. Prepoznat je kao potencijalni terapeutik u narodnoj medicini, zbog čega se dugo koristi za lečenje različitih infekcija. Etarska ulja su sekundarni metaboliti koje sintetišu aromatične biljke. Za etarsko ulje cimeta (CEO) su definisane različite biološke aktivnosti, međutim fizičko-hemijske karakteristike ulja su slaba rastvorljivost u vodi i laka isparljivost, što ograničava njihovu primenu. Iz tog razloga, formulacija emulzija etarskih ulja predstavlja dobro rešenje za prevazilaženje problema njihove primene. Iako se CEO smatra bezbednim za upotrebu, rezultati istraživanja variraju, ukazujući na neophodnost daljih toksikoloških istraživanja.

Cilj ovog rada je bila komparativna analiza biološke aktivnosti i in vitro toksičnosti CEO i njegove emulzije (EM). Antioksidativni potencijal je ispitivan DPPH testom. MTT test je primenjen u cilju procene citotoksičnog efekta CEO i EM na fibroblastima pluća fetusa (MRC-5). Na istoj ćelijskoj liniji, ispitivan je nivo oštećenja molekula DNK, primenom alkalnog komet testa. Na osnovu rezultata DPPH testa, IC50 vrednost za CEO je bila 320 µg/mL, dok je za EM bila 54 µg/mL. Na ćelijskoj liniji MRC-5, IC50 vrednosti dobijene MTT testom su iznosile 0,13 mg/mL za CEO i 0,025 mg/mL za EM. CEO i EM nisu pokazali genotoksični potencijal. Uzimajući sve prethodno navedeno u obzir, CEO i EM, kao jaki antioksidanti koji pokazuju odsustvo genotoksičnosti i slabu citotoksičnost.

KLJUČNE REČI: etarsko ulje cimeta, emulzija, citotoksičnost, genotoksičnost, antioksidativna aktivnost



EVALUATION OF ANTIOXIDATIVE, CYTOTOXIC AND GENOTOXIC EFFECT OF CINNAMON ESSENTIAL OIL AND ITS EMULSION

GENOTOXICOLOGY
AND CARCINOGENICITY

Tea Ganić¹, Stefana Cvetković¹, Stefana Vuletić¹, Tatjana Stević²,
Magdalena Stevanović³, Nina Tomić³, Biljana Nikolić¹, Dragana Mitić-Ćulafić¹

1 University of Belgrade – Faculty of biology, Belgrade, [Serbia](#)

2 Institute for medicinal plant research “Dr Josif Pančić”, Belgrade, [Serbia](#)

3 Institute of technical sciences of SASA, Belgrade, [Serbia](#)

Cinnamon is among most popular aromatic plants, generally used as a spice. Over the centuries it was recognized as a potential therapeutic for different kind of infections. Essential oils are aromatic plants' secondary metabolites. Cinnamon essential oil (CEO) possess many favorable biological activities, but its physicochemical properties, as an oil, are poor solubility in water and high volatility, which limits its application. For that reason, preparation of essential oils' emulsions seems to be solution to overcome applicability problems. Even though CEO is one of the oils recognized as safe to be used, the results from different studies vary, indicating necessity to further study its toxicological properties. The aim of this study was to comparatively analyze CEO and its emulsion (EM) biological activity and in vitro toxicity. Antioxidative potential was investigated using DPPH assay.

The MTT assay was applied for the estimation of cytotoxic effects of CEO and EM on fetal fibroblasts (MRC-5) cell line. On the same cell line, level of DNA damage was evaluated, using alkaline comet assay. According to the DPPH assay results, IC₅₀ value for CEO was 320 µg/mL, for EM was 54 µg/mL. On MRC-5 cell line, IC₅₀ values were 0.13 mg/mL for CEO and 0.025 mg/mL for EM. Both CEO and EM didn't exhibit potential to induce DNA damage. Taking all above mention into account, as strong antioxidants without genotoxicity and with weak cytotoxicity, CEO and EM could be considered as good candidates for further investigation of biological activities and potential for human use.

KEYWORDS: cinnamon essential oil, emulsion, cytotoxicity, genotoxicity, antioxidative activity



www.nb.rs | нб.срб



International Standard Book Number (ISBN)

Assigned number

ISBN-978-86-917867-3-1