

UNIVERSITY OF NIŠ
Faculty of Technology, Leskovac

BOOK OF ABSTRACTS

15th INTERNATIONAL SYMPOSIUM
„NOVEL TECHNOLOGIES AND SUSTAINABLE
DEVELOPMENT“

Leskovac, October, 20-21, 2023.

UNIVERSITY OF NIŠ
Faculty of Technology, Leskovac

BOOK OF ABSTRACTS 15th INTERNATIONAL SYMPOSIUM „NOVEL
TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT“
Leskovac, 2023.

Faculty of Technology, Leskovac

Publisher: Faculty of Technology, Leskovac
For the Publisher: Prof. Dragiša Savić
Editor: Prof. Marija Tasić

CIP - Каталогизacija u publikaciji Narodna biblioteka Srbije, Beograd

6(048)(0.034.2)

INTERNATIONAL Symposium "Novel Technologies and Sustainable Development"
(15 ; 2023 ; Leskovac)

Book of abstracts [Elektronski izvor] / 15th International Symposium "Novel Technologies and Sustainable Development" Leskovac, October, 20-21, 2023. ; editor Marija Tasić. - Leskovac : Faculty of Technology, 2023 (Leskovac : Faculty of Technology). - 1 elektronski optički disk (CD-ROM) ; 12 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Na vrhu nasl. str.: University of Niš. - Tiraž 30.

ISBN 978-86-89429-56-5

a) Технологија -- Апстракти b) Технолошки прогрес -- Привредни развој -- Апстракти

COBISS.SR-ID 127014409

Printing by: Faculty of Technology, Leskovac
Impression: 30

Proofreader: Jovana Nikolić
Paging and graphical design: Vesna Marinković

ISBN-978-86-89429-56-5

15th International Symposium with international participation "Novel Technologies and Sustainable Development" was also supported by Ministry of Science, Technological Development and Innovation, Republic of Serbia.

15th International Symposium

"Novel Technologies and Sustainable Development"

Organized by: Faculty of Technology, Leskovac

Co-organizer: Serbian Academy of Sciences and Arts (SASA) - Branch in Niš,
Department of Technical Sciences, Belgrade

The Programme Committee:

Olivera Stamenković, President, Leskovac, Serbia

Vladimir Srdić, co-president, Serbian Academy of Sciences and Arts-Branch in Novi
Sad, Novi Sad, Serbia

Fedor Mesinger, Serbian Academy of Sciences and Arts, Belgrade, Serbia

Goran Nikolić, Leskovac, Serbia

Saša Savić, Leskovac, Serbia

Milan Kostić, Leskovac, Serbia

Petar Uskoković, Belgrade, Serbia

Biljana Pajin, Novi Sad, Serbia

Nataša Đurišić Mladenović, Novi Sad, Serbia

Borislav Milanović, Banja Luka, Bosnia and Herzegovina

Anita Tarbuk, Zagreb, Croatia

Karmina Miteva, Skopje, Republic of Northern Macedonia

Vimal Chandra Srivastava, Roorkee, Uttarakhand, India

Luca Polleto, Padova, Italy

Marcela Elisabeta Barbinta-Patrascu, Bucharest, Romania

Ljubica Tasić, Sao Paulo, Brasil

Dejan Nikolić, Chicago, USA

Ivan Krakovsky, Prague, Czech Republic

Alireza Bazargan, Tehran, Iran

Irena Žižović, Wroclaw, Poland

Snezana Andonova, Blagoevgrad, Bulgaria

The Organizing Committee:

Dragiša Savić, President, Leskovac, Serbia

Vlada Veljković, co-president, Serbian Academy of Sciences and Arts-Branch in Niš,
Niš, Serbia

Goran Cvetanović, Leskovac, Serbia

Goran Jović, Leskovac, Serbia

Igor Denić, Leskovac, Serbia

Radojica Ristić, Leskovac, Serbia

Aleksandar Stojiljković, Leskovac, Serbia

Petar Stojanović, Grocka, Serbia

Jovan Stepanović, Leskovac, Serbia

Dušan Trajković, Leskovac, Serbia

Ivan Savić, Leskovac, Serbia

Zoran Kostić, Leskovac, Serbia

Sanja Petrović, Leskovac, Serbia

Biljana Dođević, Leskovac, Serbia

Dejan Ranđelović, Leskovac, Serbia

Miloš Stevanović, Leskovac, Serbia

Biljana Mitić Stanković, Leskovac, Serbia

Section: BIOCHEMICAL ENGINEERING

Posters

- Maja Vukašinović Sekulić, Marica Rakin, Maja Bulatović, Tanja Krunić**
COMPARISON OF THE ANTIMICROBIAL ACTIVITY OF CLOVE ESSENTIAL OIL AGAINST PROBIOTIC MICROORGANISMS 51
- Marko Zeljko, Ida Zahović, Dragoljub Cvetković, Zorana Trivunović, Jelena Dodić**
THE SELECTION OF CULTIVATION TECHNIQUES FOR THE PRODUCTION OF FUNGAL ENZYMES ON WINERY SOLID WASTE 52
- Ida Zahović, Jelena Dodić, Zorana Trivunović**
EMULSIFYING PROPERTIES OF XANTHAN BIOSYNTHESED ON WINERY WASTEWATER 53
- Sasa Savic, Sanja Petrovic, Jelena Mitrovic, Sanela Savic, Nebojsa Cekic**
OXIDATIVE POLYMERIZATION OF PHENOL BY HORSERADISH PEROXIDASE 54
- Aleksandar Lazarević, Sanja Petrović, Jelena Zvezdanović, Natalija Đorđević, Bojana Danilović, Dragan Cvetković, Tatjana Anđelković**
ANTIMICROBIAL ACTIVITY OF PPIX-MLV LIPOSOMES AGAINST *Escherichia coli* and *Pseudomonas aeruginosa* 55
- Natalija Atanasova-Pancevska, Dzoko Kungulovski**
EXPLORING SPICES AS PROMISING ANTIMICROBIAL AGENTS 56

Section: PHARMACEUTICAL AND COSMETIC ENGINEERING

Posters

- Ivana Gajić, Aleksandra Cvetanović Kljakić, Gökhan Zengin, Abdullahi Ibrahim Uba, Ana Dinić, Maja Urošević, Vesna Nikolić, Ljubiša Nikolić**
EFFECT OF THE BIOCHANIN A COMPLEX WITH 2-HYDROXYPROPYL- β -CYCLODEXTRIN ON THE INHIBITION OF ENZYMES BY MOLECULAR MODELING 59
- Vladimirov Marijana, Stojanović Sanja, Nikolić Vesna, Nikolić Ljubiša, Savić Vesna**
IN VITRO EFFECTS OF BIRCH SAP (*Betula pendula*) ON MDCK CELLS 60
- Ana Dinić, Ivana Gajić, Ljiljana Stanojević, Aleksandra Cvetanović Kljakić, Gökhan Zengin, Ljubiša Nikolić, Maja Urošević**
ENZYME INHIBITORY ACTIVITY OF BIOCHANIN A AND ITS INCLUSION COMPLEX WITH 2-HYDROXYPROPYL- β -CYCLODEXTRIN 61
- Sanela Savic, Nebojsa Cekic, Sanja Petrovic, Sasa Savic**
IN VIVO EFFICACY OF NOVEL *ACMELLA OLERACEA* EXTRACT-CONTAINING ANTI-AGING CREAM – THE EFFECT ON BIOPHYSICAL AND SURFACE PROPERTIES OF FACIAL SKI 62
- Goran Nikolić, Saša Zlatković, Vesna Nikolić, Aleksandra Milenković, Miloš Durmišević, Dragana Marković Nikolić, Dejan Rančić**

Section: BIOCHEMICAL ENGINEERING

COMPARISON OF THE ANTIMICROBIAL ACTIVITY OF CLOVE ESSENTIAL OIL AGAINST PROBIOTIC MICROORGANISMS

Maja Vukašinović Sekulić¹, Marica Rakin¹, Maja Bulatović¹, Tanja Krunic²

¹Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

²Innovation Centre of the Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

Background: Resistance of pathogens to antimicrobial drugs is a leading cause of untimely death worldwide, which is why infectious diseases have become a global problem not only for developing countries, but also for the developed ones. Since the development of drug resistance is progressing faster than the development of new drugs, one of the possible solutions to this problem is to reconsider the use of essential oils of various herbs, which have already shown a tremendous therapeutic potential in the treatment of many infections throughout the history of mankind. Beside unsatisfactory efficiency against pathogens, antimicrobial drugs can kill the good microorganisms in the gut, altering the balance within the microbiota and negatively affecting digestive system function, often resulting in diarrhea.

Objectives: The aim of this study is to compare the antimicrobial activity of clove essential oil against probiotic strains isolated from different pharmaceutical preparations currently available on the local market (*Lactocaseibacillus rhamnosus* GG, *Lactiplantibacillus plantarum* 299v, *Lactobacillus acidophilus*, *Saccharomyces boulardii*).

Methods: The antimicrobial activity was investigated by agar well diffusion and broth macrodilution methods, and the results were compared with the effect of clove against pathogens such as *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*.

Results: Based on the results obtained by agar well diffusion and broth macrodilution methods, *S. boulardii* was the most sensitive probiotic strain with an inhibition zone diameter of 29 mm (undiluted oil), a minimum inhibitory concentration (MIC) of 0.055% (v/v) and a minimum fungicidal concentration of 0.08% (v/v). Of all *Lactobacillus* species tested, *L. plantarum* 299v proved to be the most resistant strain with a MIC of 0.2% (v/v) and a minimum bactericidal concentration of 1.5% (v/v).

Conclusions: The results of this study have shown that the clove essential oil has the potential to be used together with pharmaceutical preparations containing various *Lactobacillus* species for the treatment of infectious diseases.