UNIVERSITY OF NIŠ
Faculty of Technology, Leskovac

BOOK OF ABSTRACTS

15th INTERNATIONAL SYMPOSIUM „NOVEL TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT“

Leskovac, October, 20-21, 2023.

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

CIP - Каталогизација у публикацији Народна библиотека Србије, Београд

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

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

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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 (*Lacticaseibacillus 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.