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BOOK OF ABSTRACTS

*XII International Scientific
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"AGROSYM 2021"
October 7-10, 2021*



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PREFACE

Dear colleagues,

In your hands is the Book of Abstracts of the 12th International Scientific Agricultural Symposium "AGROSYM 2021", which I hope you will find useful in your work. As many as 700 contributions have been accepted for the Book of Abstracts. The themes of AGROSYM 2021 cover all branches of agriculture and are divided into seven sessions: 1) Plant production, 2) Plant protection and food safety, 3) Organic agriculture, 4) Environmental protection and natural resources management, 5) Animal husbandry, 6) Rural development and agro-economy, and 7) Forestry and agroforestry.

The multi-functionality of agriculture (viz. crop production, animal production and fisheries) and the central role it plays in food production, food security, rural development, bio-economy (e.g. production of fibres and raw materials for industries) and green economy (e.g. production of biofuels) determine its importance in all countries; especially nowadays, with the second year of the COVID-19 pandemic.

Many scholars and practitioners argue that technology will increase production and feed more people while reducing the variability as well as the environmental impacts of agricultural production. Technology has been particularly important for improving production in non-tree crops such as maize, rice, soybean, wheat and cotton. Because trees have longer cycles, they take longer to improve through traditional breeding programs. New techniques of plant breeding can improve productivity further, but there is a lively academic debate about their pros and cons.

While the focus has been in the past on the production side (cf. productivity, efficiency), more and more attention is nowadays paid to the consumption side as well as the intermediate stages (e.g. processing, distribution) of the food chain thus moving towards a 'farm to fork' approach. Globally, consumers are sending clearer signals than ever before about what they want on their tables i.e. higher quality as well as healthier, safer, and tastier products. Therefore, most companies in the food industry are currently exploring different ways to ensure that they have more control over the production processes for agricultural commodities as well as final products quality. Changes in investment strategy also have the potential to reduce the environmental and social costs of agriculture. It is now apparent to most investors that companies that pay more attention to sustainability and social responsibility, even with the same financial rating, will have better returns both in the short term and over time.

Agri-food systems have been central in the global debate on sustainable development and the achievement of the Sustainable Development Goals (SDGs) as shown by the recent United Nations' Food Systems Summit held in September 2021 in New York. Indeed, agri-food systems are at the center of various global challenges such as climate change, poverty, vulnerability, food insecurity, biodiversity loss, resource scarcity and ecosystem degradation. In this context, one of the goals of the sustainable agriculture movement is to create farming systems that mitigate or eliminate environmental harms associated with industrial agriculture.

Many thanks to all the authors, reviewers and colleagues for their help in editing the Book of Abstracts. Special thanks go to all co-organizers and partners for their unselfish collaboration and comprehensive support.

East Sarajevo, 07 October 2021

Prof. Dušan Kovačević, PhD

Editor in Chief, President of the Scientific Committee of AGROSYM 2021



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INFLUENCE OF GEOGRAPHICAL ORIGIN ON ANTIMICROBIAL ACTIVITY OF *ROSMARINUS OFFICINALIS* L. ESSENTIAL OILS

Nikola CVETKOVIĆ^{1*}, Ana TOMIĆ¹, Olja ŠOVLJANSKI¹, Saša ĐUROVIĆ², Siniša MARKOV¹

¹Institute of Field and Vegetable Crops Novi Sad, Maksima Gorkog 30, 21000 Novi Sad, Serbia

²Institute of General and Physical Chemistry, Studentski trg 12/V, 11158 Belgrade, Serbia

*Corresponding author: cvetkovicnikola2699@gmail.com

Abstract

As a worldwide cultivar, *Rosmarinus officinalis* L. (rosemary) in form of essential oils, extracts, and spice possesses many pharmacological properties due to different biological activities. Interestingly, the chemical profile of rosemary depends on regionality, seasonality, environmental conditions, agronomic conditions, and its own varieties. Therefore, this research aimed to investigate the impact of geographical origin on the antimicrobial activity of the essential oils. Screening of the *in vitro* antimicrobial activity was performed by the disc diffusion and microdilution methods. It can be noticed that Russian oil (RF) showed far better antimicrobial potential in comparison to Serbian oil (SRB). In the case of RF, the maximum inhibition zone of 40.00 mm was registered for all tested microorganisms, except for *Pseudomonas aeruginosa* (21.33 mm) and *Aspergillus brasiliensis* (33.00 mm) where the activity might be estimated as moderate to high. These results can indicate the possibility of using RF as a natural ingredient in combating the microbial and antimycotic resistance toward antibiotics. A high antimicrobial activity (above 30.00 mm) was also observed for SRB against *Escherichia coli*, *Staphylococcus aureus*, and *Saccharomyces cerevisiae*. However, this oil showed low to moderate activity against *P. aeruginosa*, *B. cereus*, and *A. brasiliensis*. It could be noted that SRB showed good antimicrobial activity against bacteria (MIC \leq 50%), while for the tested eukaryotic microorganisms the MIC value was above 50%, which could be related to their more complex cell structure in comparison to bacteria.

Key words: *Rosmarinus Officinalis*, essential oils, geographical origin.