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2021



**BOOK OF
ABSTRACTS**

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



AGRO 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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IN VITRO ANTIOXIDANT ACTIVITY OF SATUREJA KITAIBELII WIERZB. EX HEUFF. SUBCRITICAL WATER EXTRACT

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Abstract

Satureja kitaibelii Wierzb. ex Heuff. or Rtanj tea is an endemic species of the Carpathian mountain chain on the Balkan Peninsula. It grows in Eastern Serbia, Northwest Bulgaria, and Southwest Romania. As traditional remedy, it is used for treatment of different stomach discomforts such as pains in the lower abdomen, upset stomach, diarrhoea and nausea, for the regulation of the menstrual cycle and fertility, for muscle relaxation, and in the treatment of the upper respiratory tract infections. Therefore, the aim of this research was to examine the phytochemical composition and antioxidant activity of *S. kitaibelii* in form of subcritical water extract (SWE). HPLC analysis of SWE of *S. kitaibelii* showed the presence of ten compounds in a total concentration of 89.33 mg/g of the extract. It was demonstrated that the polarity of subcritical water was the most selective for extracting syringic acid (37.88 mg/g), caffeic acid (18.06 mg/g), and epicatechin (10.04 mg/g). Flavonoids like rutin, luteolin, and apigenin were the least abundant in this extract (<2 mg/g). Additionally, this study investigated *in vitro* antioxidant activities of *S. kitaibelii* SWE by five antioxidant assays. Four assays present radical scavenging activity while the last assay indicates transitional metal reduction. The highest scavenging abilities were observed against superoxide anion and ABTS•+ radicals (437.35 and 412.09 μmol TE/g), followed by lipid radicals (69.61 μmol TE/g), and DPPH• (32.28 μmol TE/g). In the case of ferric ion reducing ability, a value of 118.19 μmol TE/g was noticed. This study supplied new information about the phytochemical profile and bioactivity of *Satureja kitaibelii* extract. Phenolic compounds from *S. kitaibelii* were successfully extracted using subcritical water. The obtained extract contained a considerable amount of phenolic antioxidants, and the most abundant phenolics were syringic acid, caffeic acid, and epicatechin.

Keywords: *subcritical water extraction; Satureja; phenolic compounds.*