The 1st Serbian Conference on Materials Application and Technology - SCOM

BOOK OF ABSTRACTS

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Dear Colleagues and Friends,

It is our great pleasure to welcome you to the first Serbian Conference on Materials Application and Technology - SCOM2022. The conference is jointly organized by the Society for Science Development of Serbia and the Vlatacom Research and Development Institute. With a focus on cutting-edge materials design, fabrication, and integration as well as ground-breaking materials-based technologies, SCOM2022 is the new home for all materials-related technological research. This conference will highlight the most recent advancements in the field of materials technology and application aiming to bridge the gap between researchers working on materials and technology users. Energy, healthcare, electronics, optics, microfluidics, sensors, food safety, and other topics will be covered. This year, three tutorial lectures, two invited lectures, and 16 oral presentations on the following topics will be given: Nanomaterials, Biomaterials, Optical and Photonic Materials, Materials for energy production and storage, Chemo/Bio/Physical Engineering, Photocatalysis, Green technologies, Sensor materials and technologies, Materials synthesis and processing.

We anticipate that SCOM2022 will be fruitful in terms of scientific exchange and that it will strengthen existing collaborations among participants while also fostering future ones. We would like to thank various organizations for their financial assistance.

Organizers of the SCOM2022 wish you a nice time during the conference in Belgrade!

Conference Chairperson

Prof. Dr. Miroslav D. Dramićanin

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OPTIMIZATION OF THE EXTRACTION PROCESS FROM *SATUREJA MONTANA* L.: PHYSICOCHEMICAL CHARACTERIZATION OF THE EXTRACTS

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Winter savory (*Satureja montana* L.) is a widely known medicinal plant species, which has been cultivated from seeds at the experimental field of the Institute "Dr Josif Pančić", Pančevo, Serbia. The plant material used in this study was harvested from a 6-year-old plant. The aim of the study was to optimize the standard maceration process for polyphenol extraction from air-dried plant material, utilizing 50% ethyl alcohol solution. The optimization was performed through varying two most important parameters for maceration: solid-to-solvent ratio and extraction time. The obtained extracts were characterized *via* analyzing the total polyphenol content (TPC), total flavonoid content (TFC), antioxidant potential (ABTS, DPPH, FRAP, and CUPRAC assays), extraction yield, conductivity, density, surface tension, and viscosity. The TPC varied from 7.15±0.8 to 92.2±2.5 mg gallic acid equivalent (GAE)/g of plant material. Further, the extraction time and solid-to-solvent ratio had significant influence on TFC; the highest values were achieved between 30 and 90 min, and at a 1:40 ratio. The highest $ABTS^{\bullet+}$ and $DPPH^{\bullet}$ radical scavenging activities were detected in the extracts prepared using 1:30-1:50 ratios, while the best ferric and cupric ion reducing antioxidant potential was measured in the extract obtained at a 1:50 ratio. The highest extraction yield was detected in the extract obtained at a 1:50 ratio (86.0±2.9%), whereas the extraction time did not have a statistically significant influence on the mentioned parameter. On the other hand, the highest value of conductivity was measured in the extract prepared at a 1:10 ratio, and the highest density and surface tension of the extract was obtained at a ratio of 1:40 (0.941±0.002 g/mL and 29.0±0.1 mN/m, respectively), while the highest viscosity was measured in the extract prepared at a 1:20 ratio (2.89±0.02 mPa·s). In the present study, the optimization of the extraction was performed, in specific, the extraction time and solid-to-solvent ratio levels for improving the efficiency of polyphenols extraction from *S. montana* were determined. Our study shows the possibilities for production of polyphenols-rich extract of *S. montana* which might be used in pharmaceutical, food or cosmetic products.

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