



BOOK OF ABSTRACTS

THE 3RD ANNUAL CONFERENCE OF THE PAN-BALKAN ALLIANCE OF NATURAL PRODUCTS AND DRUG DISCOVERY ASSOCIATIONS (PANDA)



МИНИСТАРСТВО ПРОСВЕТЕ,
НАУКЕ И ТЕХНОЛОШКОГ РАЗВОЈА

**1st November, 2021
Belgrade, Serbia**

**Institute for Biological Research "Siniša Stanković"
National Institute of Republic of Serbia
University of Belgrade, Serbia**

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Antimicrobial potential of subtropical species from Montenegro

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Within the project of bilateral cooperation between Montenegro and Serbia, a project called 'Biocontrol of phytopathogenic fungus by natural products from subtropical plants order Rosales' is being implemented. Natural plant extracts are an alternative to synthetic fungicides or as an additional way to reduce their use. The choice and application of plant extracts depends on their functional characteristics, availability, cost-effectiveness and their impact on phyto-pathogens.

The project is focused on researching the biological properties of extracts of two subtropical plants from Montenegro: *Celtis australis* and *Ziziphus jujuba*, that previously were not recognised for this purpose.

Four extracts of *Z. jujuba* obtained from dried fruits (using various solvents: methanol, water, dichloromethane and n-butanol), and methanolic extracts prepared from leaves and unripe mesocarps of *C. australis*, were evaluated for their phenolic compounds composition as well as antimicrobial and cytotoxic properties. Both species extracts were rich in phenolic compounds.

Results showed that all of *Z. jujuba* extracts possess antibacterial/antifungal activity against seven tested bacterial species (belonging to human infectious agents and food contaminants) and fungi (four clinical isolates of dermatomycetes and six phytopathogens). The extracts showed very high antimicrobial potential, slightly weaker in the aqueous extract. No difference in antifungal potential according to the origin of the extracts was shown.

Extracts of *Celtis australis* contain various bioactive constituents and possess higher antifungal potential than 'Previcur', which is a commercial systemic fungicide used in controlling production of vegetable seedling.

Therefore, both species extracts represent potential, *Z. jujuba* as source of new compounds with antimicrobial activity, while extracts of *Celtis australis* has a potential for application in agriculture as an alternative to the synthetic fungicides.

Worth mentioning is that the examined extracts are natural biodegradable fungicides which enable a more efficient control of pathogenic bacteria and fungi.

Keywords: *Celtis australis*, *Ziziphus jujuba*, plant extracts, antimicrobial activity