University of Belgrade - Faculty of Agriculture

1st European Symposium on Phytochemicals in Medicine and Food (1-EuSPMF)

Book of abstracts

Belgrade, Serbia
7-9 September 2022

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Univerzitet u Beogradu - Poljoprivredni fakultet

Zbornik izvoda radova/Book of Abstracts

1st EUROPEAN SYMPOSIUM ON PHYTOCHEMICALS IN MEDICINE AND FOOD

Urednici/ Editors

Dr Miloš B. Rajković, full professor
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Izdavač/Publisher

University of Belgrade-Faculty of Agriculture
Belgrade, Serbia

Za izdavača/For the publisher

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Tehnička priprema/Technical assistance

Slobodan Đorđević

Dizajn/Design

Daniela Popović-Beogračić

Štampa/Printed by

Maks printing, Beograd-Zemun

Tiraž/Printed in

80 copies

ISBN 978-86-7834-408-4

Odlukom Odbora za izdavačku delatnost Poljoprivrednog fakulteta Univerziteta u Beogradu od 02.09.2022. godine, br. 231/19, odobreno je izdavanje Zbornika izvoda radova sa Simpozijuma ''1st European Symposium on Phytochemicals in Medicine and Food (1-EuSPMF)''

‡Zabranjeno preštampavanje i fotokopiranje. Sva prava zadržava izdavač

Beograd-Zemun
2022. godina

TOPICS

I – Natural resources of bioactive compounds

II – Bioactive compounds and human health

III – Medicinal herbs and spices

IV – Herbal medicines in disease prevention and treatment

V – Novel perspectives of phytochemical use in contemporary medicine

VI – Farm to fork

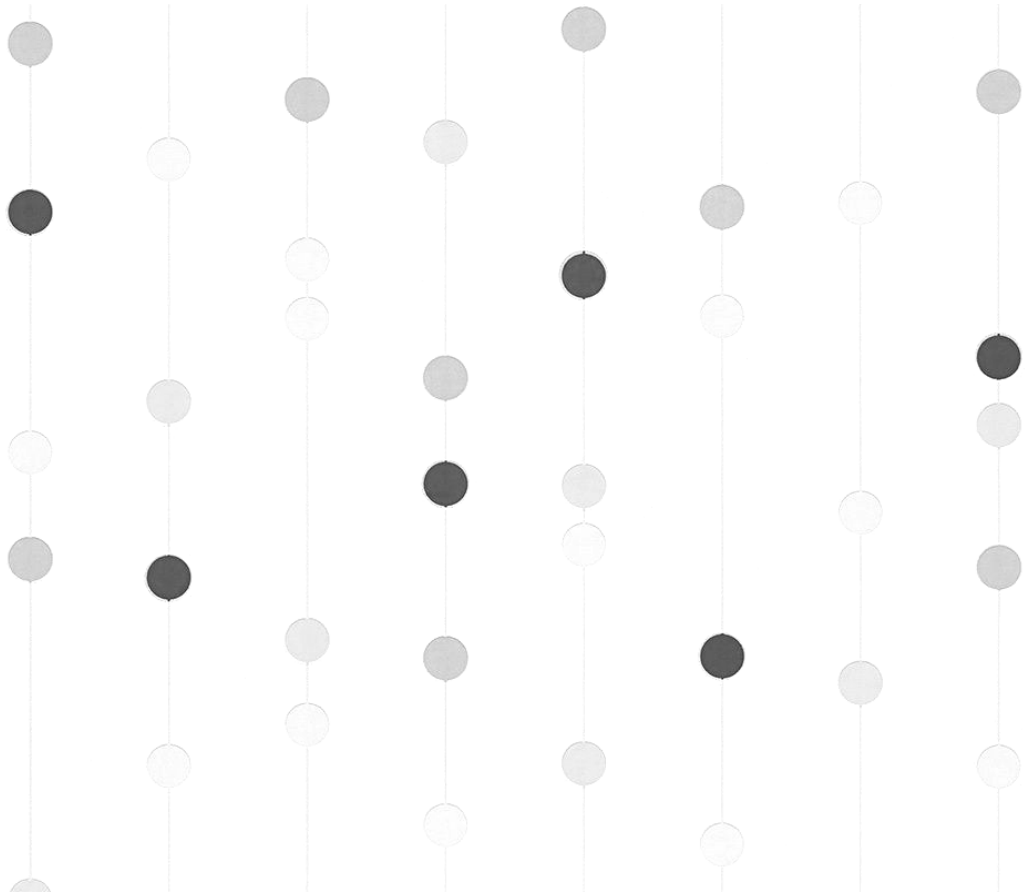
VII – Natural resources in food industry

VIII – Food and agro waste recovery

IX – Analytical methods

Abbreviations:

PL - Plenary lecture **IL** - Invited lecture **OP** - Oral presentation **PP** - Poster presentation



LIST OF PRESENTATION

I_PP7_Mycorrhization and micropropation of chestnut (*Castanea sativa* Mill.) seedlings as tools to obtain high added-value phenolic compounds

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MiChestnut3 is a project of the company DEIFIL whose main objective is to produce more resistant and productive hybrid chestnut (*Castanea sativa* Mill.) seedlings through micropropagation and mycorrhization techniques. In this work, in addition to the agronomic traits of the micropropagated mycorrhizal chestnut seedlings, it was also important to evaluate the changes induced by mycorrhization in the phenolic profile of these plants. Phenolic compounds are plant secondary metabolites involved in plant-microbe interactions/symbiosis and act as signaling molecules in the establishment of arbuscular mycorrhizal symbioses, as well as in plant defense mechanisms [1]. According to the literature, considerable increases in phenolic compounds in host plants as a result of arbuscular mycorrhizal fungus inoculation have been reported during the progression of the infection [1]. Therefore, this work was carried out to study the impact of the type of fungal inoculum and the period of mycorrhization (before or after potting) on the qualitative and quantitative profile of phenolic compounds of the roots and leaves of the chestnut seedlings produced by DEIFIL. After collection and lyophilization of the plant material, hydroethanolic extracts were prepared and the phenolic compounds were characterized by HPLC-DAD-ESI/MS [2]. Ellagic acid derivatives and *O*-glycosylated flavonoids were the major phenolic compounds in both plant roots and leaves, which agreed with previous reports [2,3]. A statistical analysis showed that the type of inoculum and period of mycorrhization significantly (p<0.05) affected the phenolic profile of the chestnut hybrids. In general, the mycorrhizal seedlings with the fungi *Amanita caesarea* and *Boletus edulis* were those that presented the highest levels of phenolic compounds. Relationships between the levels of these signaling compounds and the agronomic performance of chestnut seedlings were also found. The results bring new perspectives into the future production of a hybrid chestnut tree resistant to ink disease in the main traditional Portuguese varieties.

References

1. Mandal, S.M. et al., *Plant Signaling and Behavior,* 2010, 5, 359-368.
2. Carocho, M. et al., *BioMed Research International,* 2014, 1-7.
3. Barros, L. et al., *Industrial Crops and Products*, 2013, 44, 104-110.

Acknowledgment

The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support through national funds FCT/MCTES (PIDDAC) to CIMO (UIDB/00690/2020 and UIDP/00690/2020) and SusTEC (LA/P/0007/2021). To FCT for the contract of M.I. Dias (CEEC Institucional), C. Pereira (CEEC Institucional), J. Pinela (CEECIND/01011/2018), and L. Barros (CEEC Institucional). To 2020 North Portugal Regional Operational Programme through the European Regional Development Fund (ERDF) for co-funding the MiChestnut3 Individual R&D project (45079).