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University of Belgrade  
**210<sup>th</sup> Anniversary**  
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**PROGRAM  
I  
ZBORNIK RADOVA**

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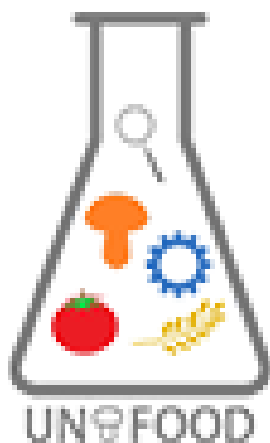
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# UNIFood Conference

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# UNIFood Conference

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## Effects of gamma radiation on phenolic composition, cytotoxicity, antibacterial and virucidal activities of two medicinal plants

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The consumers' interest for a healthier diet and the use of natural products in the prevention and/or treatment of health problems has triggered an intensive search for bioactive plant compounds. Plants are a good source of phenolic compounds, terpenoids, alkaloids, quinones, carotenoids, sterols, glucosinolates and other compounds, which provide health benefits due to their wide range of biological properties.

This work aimed to evaluate the effects of gamma radiation on the phenolic composition, cytotoxicity, virucidal and antimicrobial properties of *Aloysia citrodora* L. and *Mentha x piperita* L. infusions. Gamma radiation treatment was performed in a <sup>60</sup>Co chamber, applying the doses of 1 and 10 kGy and the results were compared with the control sample (0 kGy). The phenolic compounds profile was obtained by HPLC-DAD-ESI/MS and the cytotoxicity was evaluated in human tumour cell lines and in a primary cell culture. For virucidal efficacy evaluation, MNV-1 and HAdV-5 viral titers were determined by plaque assay in Raw264.7 and A549 cell lines, respectively. The antibacterial activity was evaluated against Gram-negative and Gram-positive bacteria. Radiation treatment has been shown to cause different effects on phenolic concentrations and virucidal efficacy, depending on the plant species studied, the virus and the absorbed dose. In cytotoxicity assay *A. citrodora* did not reveal significant statistically differences considering the different doses applied, however *M. piperita* at 10 kGy stood out with the highest cytotoxic potential in all tested cell lines. Regarding antibacterial assays, *S. aureus* was the only bacteria that was sensible to the infusions of non-irradiated and 1 kGy irradiated in both species. Thus, this study contribute to a wider knowledge of the effects of gamma irradiation on several relevant bioactive potentials of some aromatic and medicinal plants and showed that gamma radiation is a technique recommended for these matrices.

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