

3rd Symposium of Young Researchers on Pharmacognosy



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BOOK OF ABSTRACTS



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Antimicrobial, multidrug resistance reversal, and biofilm formation inhibitory effect of *Origanum majorana* extracts and essential oil

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Origanum majorana L. (OM) is a well-known medicinal and aromatic plant used since ancient times for the treatment of respiratory, gastrointestinal, and urinary tracts disorders [1]. In the food industry its distilled oil is frequently applied for increasing the storage stability and reducing microbial contamination. Several studies demonstrated the antimicrobial activity of the essential oil and its main constituent, terpinene-4-ol against bacterial and fungal strains [2,3].

The aim of the present study was to provide a broader insight into the effects of OM extracts, essential oil, and their constituents against human pathogen microorganisms. Essential oil was prepared by steam distillation, and extracts of different polarities by solvent-solvent partition of the MeOH extract. Six main compounds of the essential oil (terpinene-4-ol, sabinene, sabinene-hydrate, α -terpinene, γ -terpinene, and linalool) and a newly isolated non-volatile furanonaphthoquinone (OM-3) obtained from the chloroform extract were also included in the microbiological examinations. For antimicrobial evaluation disk diffusion and microdilution methods were applied. The extracts and essential oil were also investigated for multidrug resistance reversal and biofilm formation inhibitory effects by real-time ethidium bromide accumulation and crystal violet method, respectively.

The highest antibacterial effect was measured for OM-3, while essential oil and sabinene exerted pronounced inhibitory effect on efflux mechanisms. Concerning the biofilm formation, sabinene and sabinene-hydrate proved to be the most potent inhibitors.

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