



2022  
**Belgrade**

# **FEMS Conference on Microbiology**

in association with  
Serbian Society of Microbiology

**30 June - 2 July**

**2022 • Serbia**

**ELECTRONIC  
ABSTRACT BOOK**

We thank the pharmaceutical, lab and biomedical industry partners from Serbia, the South East Europe region and worldwide for their recognition of the importance of the event, their participation and their support.

We hope that you enjoyed the content and all the other aspects of the Conference. If you missed anything, you can catch up by watching the recordings, presentations or have a detailed look at the posters.

We warmly wish you health, love and happiness and are looking forward to the new encounters, coming up next: FEMS 2023 Congress in Hamburg, FEMS 2024 Conference in Tallinn and numerous events of the SSM in Serbia and South East Europe region.

**Sincerely** .....



*Hilary Lappin-Scott*

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**Prof. Hilary Lappin-Scott**  
Scientific Committee Chairperson,  
FEMS President



*Vaso Taleski*

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**Prof. Vaso Taleski**  
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**Prof. Lazar Ranin**  
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**346 / ETHANOLIC EXTRACTS OF LAMIACEAE SPECIES INHIBIT THE BACTERIAL INFECTION OF HUMAN LUNG FIBROBLASTS AND STIMULATE CELL MIGRATION**

**Keywords:** *Lamiaceae, Extracts, Antibacterial activity, Wound healing*

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**BACKGROUND**

The increasing bacterial resistance to antibiotics poses a serious global threat. For that reason, the research into plant-derived antibacterial agents has become progressively more interesting, particularly in regard to their capacity to prevent the delay or inability of wound closure and healing.

**OBJECTIVES**

The aim of this study was to evaluate i) the antibacterial potential of ethanolic extracts (70% ethanol) of 18 Lamiaceae species against four Gram-negative and three Gram-positive bacterial strains; ii) the effect of these extracts on *Pseudomonas aeruginosa* PAO1 infection of human lung fibroblasts (MRC-5), and iii) the effect on MRC-5 cell migration.

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**METHODS**

The antibacterial activity was tested by minimal inhibitory concentration (MIC) assay. The effect on bacterial infection of MRC-5 cells was determined using the invasion assay, while the cell migration was assessed with Scratch assay.

**RESULTS**

The tested Gram-positive bacteria, especially *Bacillus subtilis*, are more sensitive to the effects of ethanolic extracts than the Gram-negative bacteria. Moreover, the tested extracts significantly inhibited the invasion of *Pseudomonas aeruginosa* PAO1 during MRC-5 infection, and most of them also displayed promising stimulating potential on MRC-5 migration in a disrupted cell monolayer. Finally, the results of IBR (integrated biomarker response) analysis highlighted *Salvia officinalis* ethanolic extract as the most active one, which is in accordance with the existing data suggesting that this plant represents an effective antibacterial and wound-healing agent commonly used in traditional medicine. Altogether, these results are expected to foster further studies that will focus on combating bacterial resistance to antibiotics using natural products.

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