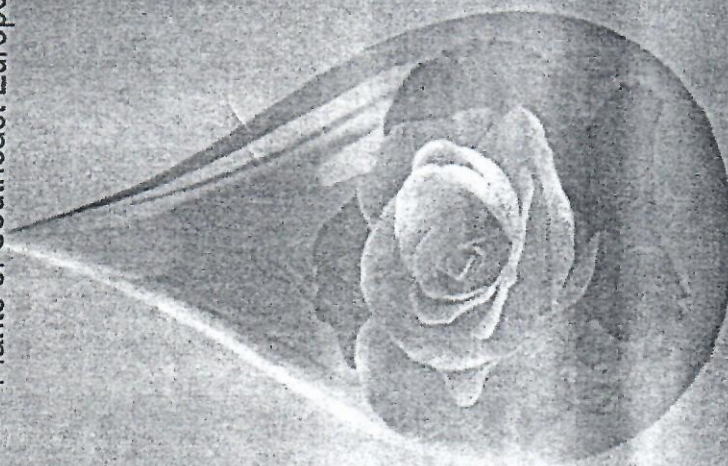


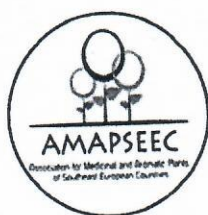


# 9<sup>th</sup> CMAPSEEC

Conference on Medicinal and Aromatic  
Plants of Southeast European Countries



26-29 May 2016  
Plovdiv, Bulgaria



**9<sup>th</sup> Conference on Medicinal and Aromatic Plants of  
Southeast European Countries**

26 – 29 May 2016, Park Hotel Imperial  
Plovdiv, BULGARIA

**BOOK OF ABSTRACTS**

<http://cmapscec2016.cim.bg/>

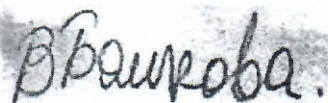
Dear 9<sup>th</sup> CMAPSEEC Participants,

I am honoured to welcome you on behalf of the Organizing Committee of the 9<sup>th</sup> Conference on Medicinal and Aromatic Plants of the Southeast European Countries. Traditionally, the Conferences of the Association for Medicinal and Aromatic Plants of the Southeast European Countries gather scientists, professionals and representatives of companies working in the exciting field of medicinal and aromatic plants not only from Southeastern Europe but also from many countries all over the world. This meeting is a great opportunity to share research results, new approaches and ideas, views and visions for the development of the application of medicinal and aromatic plants for the benefit of society. It is also a celebration of human curiosity and endeavour to explore Nature.

We know that there are many conferences to choose from these days and budgets are always tight, so we are glad to have a significant number of abstracts submitted, and we are happy to have you all here, in the beautiful historical city of Plovdiv.

We hope that you will enjoy the scientific program and the social events, meet old friend and make new ones!

Welcome to the 9<sup>th</sup> CMAPSEEC 2016!

A handwritten signature in dark ink, appearing to read 'В. Банкова' (V. Bankova), written in a cursive style.

Vassya Bankova, PhD, DSc  
Chair of the Organizing Committee

**9<sup>th</sup> Conference on Medicinal and Aromatic Plants of  
Southeast European Countries**  
26 – 29 May 2016, Plovdiv

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# SELECTION OF SECONDARY-METABOLITE-PRODUCING- PSEUDOMONAS CHLORORAPHIS STRAINS EFFECTIVE AGAINST FUSARIUM SPP., ALTERNARIA ALTERNATA AND PHOMA SP. ISOLATED FROM HELICHRYSUM ITALICUM

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Antagonistic interactions between plant growth promoting rhizobacteria (PGPR) and fungi are widely used in biological control. A number of soil bacteria, including *Pseudomonas chlororaphis*, produce secondary metabolites that inhibit eukaryotic growth. In this investigation, indigenous *Pseudomonas chlororaphis* strains were tested for antagonistic activity to six fungal phytopathogens isolated from *Helichrysum italicum* (Roth) Don: *Fusarium semitectum*, *F. verticilloides*, *F. oxysporum*, *F. subglutinans*, *Alternaria alternata* and *Phoma* sp. All tested strains inhibited fungal growth in dual agar plates and inhibition rate ranged from 32% on PDA (potato dextrose agar) to 91% on WA (Waksman agar). Two *P. chlororaphis* strains, M12 and M29, were selected as highly effective and showed multiple plant growth promoting traits. Several secondary metabolites involved in antibiosis of phytopathogenic fungi were produced by those strains- HCN and three type of antibiotics: PCA- phenazine-carboxylic acid, PRN- pyrrolnitrin, and 2,4-diacetylphloroglucinol (2,4-DAPG). Genes for antibiotic production were confirmed by PCR using following primer sets: PCA2a/PCA3b for PCA, Prncf/Prncr for PRN and Phl2a/Phl2b for 2,4-DAPG<sup>1</sup>. Different fractions of liquid cultures of M12 and M29 strains were tested for growth inhibition of four *Fusarium* species, *A. alternata* and *Phoma* sp. Strain M12 was selected as promising agent for plant growth stimulation and protection against pathogenic fungi isolated from *H. italicum*. The healthy plants are necessary knowing that its flowers and leaves are used in the traditional medicine in the treatment of health disorders such as allergies, colds, cough, skin, liver, inflammation, infections and sleeplessness<sup>2</sup>.

**Acknowledgements:** This work was funded by Ministry of Education, Science and Technological Development, Republic of Serbia, Project No III46007.

## References:

- <sup>1</sup>Jha BK, Pragash MG, Cletus J, Raman G, Sakthivel N. (2009). Simultaneous Phosphate solubilization potential and antifungal activity of new fluorescent pseudomonad strains, *Pseudomonas aeruginosa*, *P. plecoglossicida* and *P. mosselii*. World J Microbiol Biotechnol. 25: 573-581.
- <sup>2</sup>Antunes Viegas D, Palmeira-de-Oliveira A, Salgueiro L, Martinez-de-Oliveira J, Palmeira-de-Oliveira R (2014) *Helichrysum italicum*: from traditional use to scientific data. J Ethnopharmacol. 151(1): 54-65.