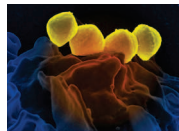
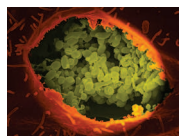
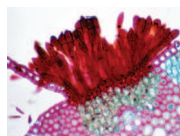


**POWER OF
MICROBES**
IN INDUSTRY AND ENVIRONMENT 2023

Book of Abstracts



May 15-18, 2023 | Valamar Diamant Hotel, Poreč, Croatia

Power of Microbes
in Industry and Environment

BOOK OF ABSTRACTS

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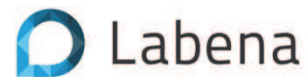


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CONTENTS

Presidents' foreword	9
General information	10
Programme.....	11
Invited lectures.....	17
Oral presentations.....	33
Poster presentations	57
Tribune lectures.....	123
Sponsor lecture	131
List of authors	135

PRESIDENTS' FOREWORD

Dear colleagues and friends,

It is our great pleasure to welcome you at the symposium "Power of Microbes in Industry and Environment 2023", held in Poreč, Croatia from May 15th to May 18th 2023.

This symposium which covers all important topics of applied microbiology is already the seventh in a row, starting with the meeting in Opatija in 2002 and followed by the symposia in Zadar in 2007, Malinska (island Krk) in 2010, Primošten in 2013, Krk in 2016 and Sv. Marti na Muri in 2019. Like the previous meetings, the one this year is organized by the Croatian Microbiological Society in collaboration with the Czechoslovak Society for Microbiology, Hungarian Society for Microbiology, Slovenian Microbiological Society and Turkish Society of Microbiology. The symposium is held with the support of the Federation of European Microbiological Societies (FEMS), Faculty of Food Technology and Biotechnology, and Croatian academy of Engineering.

The experience of the past meetings motivated our efforts to continue with this series with a clear tendency to strengthen the scientific connections among research groups of neighbouring countries. Following the tradition established by the previous meetings, "Power of microbes 2023" will cover hot topics in the fields of applied microbiology and biotechnology, thus creating multidisciplinary background and bringing together scientists from all research environments, including academia, research institutes and industry. We strongly believe that "Power of microbes 2023" is an excellent place to exchange and combine scientific ideas among the experts and participants with great possibilities to start the new international collaborations and common scientific projects. In addition to the lectures of the invited speakers, the programme includes presentations of a number of young scientists and PhD students, many of which are supported by FEMS grants. We thank all participants for their scientific involvement that will significantly contribute to the success of "Power of microbes 2023".

We hope that you will enjoy the programme of the "Power of microbes 2023" and find it stimulating and informative. We also hope that you will enjoy the beauty of Istria county and Croatian hospitality. Last but not least, we wish that the "Power of microbes 2023" will continue to be the place to revive the old and form the new friendships.

Renata Teparić



President of the Organising
Committee

Vladimir Mrša



President of the International
Programme Committee

GENERAL INFORMATION

SYMPOSIUM VENUE

The meeting is held at the congress centre of the Valamar Diamant Hotel 4*, Brulo 1, HR-52440, Poreč, Croatia. Phone: +385 52 400 000.

REGISTRATION OF PARTICIPANTS

Registration desk will be opened on Monday, May 15 from 14:00 to 15:00, as well as on Tuesday, May 16 from 08:30 to 09:00 in front of the Magnolia congress hall, Valamar Diamant Hotel. Daily updates on the symposium sessions and social events will be available at the registration desk.

All participants and accompanying persons are kindly requested to wear their conference badges during the scientific sessions and symposium social events.

LANGUAGE

The official language of the symposium is English.

INTERNET AND E-MAIL ACCESS

To access the internet and e-mail, please ask at the reception desk of the Valamar Diamant Hotel.

OPENING CEREMONY AND SOCIAL EVENTS

The opening ceremony will be held in the congress hall of the Valamar Diamant Hotel on Monday, May 15 from 15:00 to 15:30. The welcome reception with buffet dinner will take place at 20:00 on the terrace of the hotel restaurant.

On Wednesday, May 17 the symposium excursion is scheduled at 15:00. Excursion includes symposium dinner at family run farm Jadruhi, starting at 19:00.

INFORMATION FOR PRESENTERS

Oral presentations will be held in Magnolia congress hall of the Valamar Diamant Hotel. LCD projections are available during all sessions. Please send your PowerPoint presentation to the powerofmicrobes2023@gmail.com.

Posters will be displayed in the congress hall Lavanda on Tuesday, May 16 and should be mounted during the morning. Presenters of the posters are kindly requested to be at their posters and available for discussion on Tuesday, May 16 from 16:20 to 20:00. Posters should be dismantled immediately after poster session.

P46

Effectiveness of Essential Oils as Inhibitors of Quorum Sensing Activity

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Quorum sensing (QS) represents a specific way of bacterial intercellular communication, which is enabled owing to their ability to detect and respond to cell population density by gene regulation. QS mechanisms are responsible for controlling the pathogenesis, virulence luminescence, motility, sporulation, and biofilm formation of many organisms by regulating gene expression. Therefore, research in this field is an attractive target for developing new natural antibacterial agents. Considering the importance of QS during bacterial pathogenesis, this research has been focused on the evaluation of the anti-QS properties of four essential oils (EOs) *Origanum heracleoticum*, *Origanum vulgare*, *Thymus vulgare*, and *Thymus serpyllum*, using biomonitor strain *Chromobacterium violaceum* CV026. Tests were conducted on Luria Bertani agar supplemented with N hexanol DL homoserine lactone (HHL) 10µl/50ml of agar. The anti-QS potential of the EOs was assayed in a range of 200 – 0.39 µl/ml using the disc diffusion method. EOs of *T. vulgare* and *T. serpyllum* exhibited anti-QS activity indicated by a non-pigmented ring in a dilution-dependent manner. The lowest dilution of *T. vulgare* and *T. serpyllum* in which they exhibited visually detectable inhibition of violacein synthesis was 6.25 µl/ml for both tested EOs.

O. heracleoticum and *O. vulgare* displayed different active principles, i.e. antimicrobial activity indicated by the inner clear ring and anti-QS activity indicated by the outer non-pigmented ring, in a concentration-dependent manner. The lowest dilution of *O. heracleoticum* and *O. vulgare* which exhibited visually detectable inhibition of violacein synthesis was 1.56 and 3.25 µl/ml, respectively. The main constituents of the tested EOs are monoterpenes (carvacrol, thymol, γ-terpinene, and p-cymene) and anti-QS properties of tested EOs can be mainly attributed to their activity. In particular, from the scientific literature, carvacrol and thymol show a sub-inhibitory effect against foodborne pathogens. Previous studies indicated that sub-lethal concentrations of carvacrol reduced the mobility of bacteria due to the ability of interference using the QS mechanism between the bacterial cells, thereby reducing the ability of biofilm formation. The precise mechanism by which carvacrol inhibits biofilm formation is still not fully understood.

The results imply that EOs represent a promising alternative for effective control of the emergence and spread of resistant pathogens.



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