



20th ISMS CONGRESS

Program and Abstract Book

26-27 February 2024, Las Vegas, USA



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Abstracts & Presenter Bios

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How to Use This Book

Abstracts in this book have been divided into oral presentations and posters.

Oral Presentations

Abstracts in this book are listed in the same order as they appear in the program - ie the number beside the presentation title in the program corresponds to the same number beside the title in the Book of Abstracts.

Posters

Posters have been loosely grouped into topics and allocated a number primarily for pinning purposes. The number beside the poster title in the Book of Abstracts relates to the order the poster will appear in the poster gallery.

Author Index

Abstracts can also be located via the author index at the end of the book.

Welcome from the ISMS President

On behalf of the ISMS Executive Committee, it is a pleasure to welcome you to the 20th ISMS Congress (ISMSC) in Las Vegas, Nevada in the USA.

This Congress is being held in conjunction with the 26th North American Mushroom Conference (NAMC) to offer delegates a joint event with a seamless smorgasbord of information, inspiration, and networking to deliver a truly memorable experience that will last for years to come.

ISMS Congresses have been held once every four years or so since 1950. The combination of scientists, students, and research workers getting together with growers, traders, and suppliers from all parts of the globe to learn about and discuss the latest discoveries, new technologies, and where the industry is heading, has been a highly successful formula for over 70 years.

The 2024 ISMSC will continue that legacy in Las Vegas with a modern program of oral presentations and poster sessions surrounded by meal breaks and social functions that will provide the all-important delegate interaction opportunities. The diversity of experiences that Las Vegas has to offer will certainly enhance the event.

The Congress program will showcase the work of scientists from 22 countries delivering 60 cutting-edge oral presentations and posters. The *Book of Abstracts* will enable delegates to see what the Congress program has to offer and plan their daily activities. It will also be a handy reference compendium in the office and a practical memento of your time at this potentially life-changing event.

The Congress program includes three high profile and highly entertaining keynote speakers. Thank you in advance to Dr Shiuan Chen, Dr Eoin O'Connor and Dr Lynn Rothschild for giving their time and sharing their knowledge so we can have a greater insight into what is coming down the pipeline.

Planning, organizing and running an event like the ISMSC/ NAMC is a demanding task requiring lots of support from a large cast. ISMS wishes to thank all those who have helped in getting us this far. A special mention for Dr John Pecchia, the Scientific Committee, and Liz Bouzoudis (ISMS Secretariat) for their excellent work in putting the scientific program together. Also to the authors and presenters who have provided such worthy content.

A big shout-out to the American Mushroom Institute for hosting this joint event, particularly the office team of Rachel Roberts, Lori Harrison, and Amy Ducharme.

Thank you to our sponsors and exhibitors who financially underpin this event and provide another source of knowledge and experience for delegates. Make sure you spend plenty of time in the Expo each day. It is amazing who you will meet and what you will learn.

It is also important that I publicly acknowledge the tireless and talented efforts of Elizabeth Bouzoudis in managing the ISMS side of this joint event. Liz is the engine room of the ISMS Secretariat and has put in a truly herculean performance since planning began several years ago.

Before closing, I'd like to take a few moments to reflect on what we as delegates can do to leverage all the hard work that has gone into getting us here today.

No matter where you are from, how long you have been in the industry, or whether you are an ISMS veteran or a first time Congress delegate, you will have the opportunity to be part of a very special "family" experience during your time in Las Vegas and beyond.

The 'international mushroom family' will be important as times become more turbulent - globally and in our worlds at home. Cherish it, nourish it, and respect it and this family will support you for the rest of your life in the industry and even afterwards if you happen to move on.

Experience tells me you will get the most out of your attendance in Las Vegas if you actively participate in all aspects of the program day and night. Attend as many sessions as you can, visit the poster area during the breaks, say hello to as many of your fellow delegates as possible and celebrate the joy of being part of a unique industry at the functions and after parties.

Learn, laugh, and have fun! It's a privilege to be able to do so!



Greg Seymour
President ISMS
26 February 2024

Comments from Scientific Committee Chair

On behalf of the ISMS scientific committee, I am pleased to welcome everybody back, in-person, for the 20th ISMS Congress being held this year in Las Vegas, Nevada, USA.

We've received over 75 abstracts from 23 countries from authors presenting their most recent research findings from traditional topics centered around substrate utilization and disease control to more current and interdisciplinary fields ranging from mycomaterials to the use of biotechnology to better understand fungal growth and utilization.

With the ever-growing number of challenges being faced by mushroom growers, it is imperative that we continue to improve our understanding of the science behind mushroom cultivation. Growers are facing mounting issues ranging from labor shortages, increased costs, new diseases and an increased scrutiny surrounding sustainability topics.

We hope participants take this opportunity to highlight their research, as well as network and develop potential collaborations that will strengthen our field moving forward, and build upon the framework laid out by previous scientists as well as our current colleagues.

I'd like to thank members of the scientific committee that helped make this Congress possible: Dr. David Beyer, Dr. Benay Gursoy, Dr. Helen Grogan, Dr. Michael Kertesz, Dr. Carlo Nicoletto, Dr. Eoin O'Connor, Dr. Nancy Pyck and Dr. Fabricio Vieira.

John Pecchia Ph.D.
Scientific Committee Chair

12. Antifungal activity of peppermint and spearmint essential oils against *Trichoderma* spp. green mold disease agents of oyster mushroom and shiitake

Poster

***Dr. Ivana Potocnik*¹, *Ms. Jelena Lukovic*¹, *Dr. Milos Stepanovic*¹, *Dr. Biljana Todorovic*¹, *Dr. Tijana Djordjevic*¹, *Dr. Rada Djurovic-Pejcev*¹, *Dr. Svetlana Milijasevic-Marcic*¹**

1. Institute of Pesticides and Environmental Protection

Production of oyster mushroom (*Pleurotus* spp.) and shiitake (*Lentinula edodes*) is seriously affected by various *Trichoderma* species causing green mold disease. The purpose of the study was to determine the antifungal activity of essential oils peppermint (*Mentha piperita*) and spearmint (*Mentha spicata*), both obtained from plants from Serbia, against *Trichoderma* strains isolated from *Pleurotus ostreatus* oyster mushroom (*Trichoderma pleuroti* KM11 and *Trichoderma pleuroticola* KM12, 2018, North Macedonia) and shiitake substrates (*Trichoderma guizhouense* T59, 2018, Serbia). Air-dried plant material was subjected to hydro-distillation in a Clevenger type apparatus. The obtained essential oils were dried over anhydrous sodium sulphate. Antifungal activity of the oils was tested using *in vitro* methods: contact microdilution by using a pathogen spore suspension, and fumigant macrodilution by applying either pathogen mycelial inoculum or spore suspension. Both oils were lethal for all tested species when the contact microdilution method was used at 12.5 $\mu\text{L mL}^{-1}$, while no fungicidal effect of either oil was found on any tested strain using the fumigant method. In the contact microdilution bio-assay, both oils inhibited *T. guizhouense* T59 at 3.12 $\mu\text{L mL}^{-1}$; peppermint oil more strongly suppressed *T. pleuroti* KM11 (3.12 $\mu\text{L mL}^{-1}$) than *T. pleuroticola* KM12 (6.25 $\mu\text{L mL}^{-1}$), while spearmint oil had an opposite effect. Using fumigation, both oils inhibited mycelial growth of the tested species at 0.16 $\mu\text{L mL}^{-1}$, with an exception of spearmint oil, which inhibited *T. guizhouense* T59 at 0.32 $\mu\text{L mL}^{-1}$ of air phase. Inhibition of spore germination of *T. pleuroti* KM11 by fumigation was detected at 0.08 (peppermint oil) or 0.016 $\mu\text{L mL}^{-1}$ (spearmint oil), *T. pleuroticola* KM12 at 0.016 $\mu\text{L mL}^{-1}$ (both oils), and *T. guizhouense* T59 at 0.32 $\mu\text{L mL}^{-1}$ (peppermint oil) or inhibition was missing (spearmint oil). The most resistant taxon to both oils was *T. guizhouense* from shiitake. Both oils showed similar contact effect, while peppermint oil exhibited a slightly stronger fumigant activity than spearmint oil on the tested strains. Peppermint and spearmint oils could be recommended for further *in vivo* investigation.

This research was supported by the the Ministry of Science, Technological Development and Innovations of the Republic of Serbia: project No 451-03-47/2023-01/ 200214.

Presenting Author Biography - Ivana Potocnik:

Ivana Potocnik is the principal research fellow at the Laboratory of Applied Phytopathology, Institute of Pesticides and Environmental Protection, Belgrade, Serbia, dealing with the pathology of edible mushrooms. Her research focuses on the disease agents of edible mushrooms and implementation of biopesticides based on beneficial organisms and biochemicals. She was a leader or member on several industrial and scientific projects aimed at sustainable crop protection. In addition to scientific publications, she supervised two PhDs and many graduate and master students. She has two technological solutions concerning ecological disinfection of substrates and the application of biopesticides in the production of edible mushrooms.