ABSTRACTS OF LECTURES AND POSTERS

THE World Mycotoxin Forum®

13TH CONFERENCE

WMF meets Italy

16-18 MAY 2022

PARMA - ITALY

WWW.WORLDMYCOTOXINFORUM.ORG

SPONSORS & EXHIBITORS

Get the latest update on www.WorldMycotoxinForum.org

PLATINUM SPONSOR

r-biopharm
www.r-biopharm.com

Waters™ | VICAM

GOLD SPONSORS

ADISSEO
A Bluestar Company

Phileo by Lesaffre

DSM

ROMER
Romer Labs®

eurofins | Technologies

LIBIOS

trouw nutrition
a Nutreco company

SILVER SPONSORS

Alltech®

ENVIROLOGIX

BRONZE SPONSORS

NEOGEN

Cargill

olmix
for a better life

PROGNOSIS
BIOTECH

SAFE food

BIOEASY

CHARM
SCIENCES INC

agrimprove
we farm ideas

ThermoFisher
SCIENTIFIC

Impextraco
Optimizing feed ingredients

mixscience
INNOVATE FOR LIFE

PATENT CO.®

EXHIBITORS

TRILOGY

RANDOX
FOOD DIAGNOSTICS

OrSell
CONTROLLA GLI ALIMENTI

MEDIA PARTNERS

World Mycotoxin Journal

affidia
THE JOURNAL

CONTENTS

Committees **2**

Welcome to Parma **3**

Social events **4-5**
Welcome reception 4
Guided walking tour & Conference dinner 5

Programme **6-22**
Programme at a glance 6-7
Conference programme 8-20
Workshop programme 21
Young Scientists Forum 22
Excursion to Barilla 22

Abstracts of lectures **23-87**
Monday 16 May 2022
Plenary session *Addressing today's and tomorrow's challenges* 24-26
Plenary session *Speed presentations* 27
Plenary session *Company pitches* 28-35

Tuesday 17 May 2022
Session 1 *Animal health and productivity* 36-41
Session 2 *Exposure assessment and human health* 42-47
Session 3 *Mitigating mycotoxin risks* 48-51
Session 4 *Update on EFSA activities in mycotoxin risk assessment* 52-55
Session 5 *Focus on mycotoxigenic fungi, plants, and soil* 56-59
Session 6 *Mycotoxin management along the food & feed chain* 60-64
Session 7 *Managing mycotoxins in a sustainable future* 65-69
Session 8 *Smart solutions for advanced toxin control and mitigation (FFoQSI)* 70-73

Wednesday 18 May 2022
Session 9 *Update on (multi-)mycotoxin analysis* 74-78
Session 10 *Modelling strategies and digitalisation in mycotoxin management* 79-83
Final plenary session *Looking further ahead* 84-87

Abstracts of posters **88-164**
Index 89-101
Occurrence – mycotoxigenic fungi and mycotoxins 102-113
Exposure assessment and health 114-120
Mitigating the negative impact of mycotoxins 121-135
Controlling plant disease and mycotoxin formation 136-150
Sampling and analysis 151-161
Capacity building 162-164

Key to the abstracts of lectures and posters:

- the abstracts of lectures and posters are grouped separately;
- the lectures are grouped according to the daily programme; and
- the posters are grouped according to theme and then in an alphabetical order according to the presenting/corresponding author.

COMMITTEES

General Conference Chairs

Prof. Rudolf Krska	Department IFA-Tulln, BOKU Vienna, Austria
Prof. Chris Elliott	The Institute for Global Food Security, Queen's University Belfast, UK

Local conference chairs

Prof. Chiara Dall'Asta	University of Parma, Italy
Prof. Michele Suman	Barilla, Italy

International Advisory Committee

Dr Amare Ayalew	African Union Commission, Ethiopia
Prof. Paola Battilani	Università Cattolica del Sacro Cuore, Italy
Dr Jeffrey Cary	U.S. Department of Agriculture, USA
Prof. Marthe De Boevre	Ghent University, Belgium
Dr Johan De Meester	Cargill R&D Centre Europe, Belgium
Prof. Sarah De Saeger	Ghent University, Belgium
Dr Jagger Harvey	Kansas State University, USA
Prof. Yang Liu	Foshan University, China
Dr Carlos A. Mallmann	Federal University of Santa Maria, Brazil
Dr Monique de Nijs	Wageningen Food Safety Research, the Netherlands
Dr Isabelle Oswald	INRAE, France
Dr Awanwee Petchkongkaew	Thammasat University, Thailand
Dr Lindy J. Rose	Stellenbosch University, South Africa
Dr Sheryl Tittlemier	Canadian Grain Commission, Canada

WELCOME TO PARMA

The World Mycotoxin Forum® is the leading international meeting series on mycotoxins dedicated to assembling the world's best minds across the spectrum of integrated strategies ensuring the safety and security of the food and feed supply chain. The World Mycotoxin Forum® brings together a holistic conference programme covering the latest issues in mycotoxin management and is targeted at everyone working in the mycotoxin space – researchers, food and feed industry, laboratories, policy makers, and enforcement agencies from around the world.

The 13th conference of the World Mycotoxin Forum® – **WMF*meets*ITALY** – will offer an excellent way to network, share ideas, and formulate recommendations and conclusions on how to close knowledge gaps. It will include:

- presentations and discussions in plenary meetings and parallel sessions
- poster sessions
- workshops
- WMF Young Scientists Forum
- company pitches, case studies, and industry updates covering a wide range of topics
- a concurrent instrument/manufacturers exhibition providing information on equipment, products, and services.

The aim of this year's conference is to elaborate further on key strategic issues looking forward, amid the current challenges. High-quality speakers, ample time for discussions, and every opportunity to establish rewarding contacts are values the World Mycotoxin Forum® wants to uphold. You are invited to take part in the discussions with participants from different disciplines and meet business relations in your area.

We wish you an active and fruitful meeting!

General conference chairs
Rudolf Krska
Chris Elliott

Local conference chairs
Chiara Dall'Asta
Michele Suman

UNIVERSITÀ DI PARMA

Barilla
The Italian Food Company. Since 1877.

ABOUT PARMA

Con il patrocinio

Comune di Parma

Located in northern Italy in Emilia-Romagna region, Parma is a wonderful destination for those who appreciate art, architecture, and Italian food. The city, located at the gateway to the area producing Parmigiano Reggiano cheese and balsamic vinegar, is probably most famous for Prosciutto di Parma. In addition to these Italian delicacies, there is plenty to do and see in Parma. The city has delightful streets, art museums, and a celebrated cathedral and baptistry.

PARMA! City of Gastronomy

unesco
Member of the Creative Cities Network

development of the biocontrol strain in polymers with the addition of glucose or sucrose was evaluated. The diameter of the pores of each polymer was determined and those with a pore diameter of 93-97 µm were selected assuming they allow a better use of the entire substrate by the biological control agent. In addition, the growth of the biological control strain in the different preparations was analysed. The synthesis of this biopolymer included stages of gelation, cooling, freezing, thawing, drying, sterilization and curing, hydration, pH regulation, inoculation, incubation, and final drying. The effectiveness of the bioformulate evaluated under field showed a reduction of 81% in aflatoxin accumulation in maize kernels in comparison with the non-inoculated controls. The development of this biotechnological tool allowed us to present a process and product patent that is currently pending. In addition, it offers to producers an eco-friendly, economical, and safe alternative that contributes to food quality and safety.

P70

INFLUENCE OF TEMPERATURE AND WATER ACTIVITY ON GROWTH AND AFLATOXIN PRODUCTION OF *ASPERGILLUS FLAVUS* STRAINS ISOLATED FROM CHICKPEAS

C.J. Romero[1], J.F. Humaran[1], M.J. Nichea[1], V. Zachetti[1], E. Cendoya[1], L. Demonte[2,3], M.R. Repetti[2], **Sofia N. Chulze**[1] and M.L. Ramirez[1]
[1]Research Institute on Mycology and Mycotoxicology, National Research Council from Argentina – National University of Rio Cuarto, Argentina; [2]The Chemical Residues and Contaminants Research and Analysis Program, Faculty of Chemical Engineering, National University of the Litoral, Argentina; [3]National Research Council from Argentina, Argentina
schulze@exa.unrc.edu.ar; mramirez@exa.unrc.edu.ar

Chickpea (*Cicer arietinum* L.) is one of the most cultivated pulses in terms of world production. There is a high demand for world production due to the crop's nutritional value. In Argentina, most of chickpea production is exported. Chickpea is susceptible to more than 25 well-documented fungal pathogens that cause seed deterioration and contamination with mycotoxins. The most worldwide prevalent fungi in chickpeas are species belonging to *Aspergillus*, *Fusarium*, *Penicillium*, *Alternaria*, and *Rhizopus* genera. In a previous study, we observed that *A. flavus* was the prevalent fungi isolated from chickpea. Considering that *A. flavus* has the ability to produce aflatoxins (compounds classified in group 1 by IARC) and aflatoxin production and fungal growth of *A. flavus* can be influenced by abiotic conditions, the effect of water activity (a_w, 0.99, 0.98, 0.96, 0.94, 0.92, 0.90 and 0.87), temperature (15, 25, and 30°C), incubation time (5, 10, 14, and 21 days), and their interactions on mycelial growth and aflatoxin production in a chickpea-based medium by three *A. flavus* strains isolated from chickpea in Argentina was evaluated. Maximum growth rates were obtained at a_w 0.99 and 30°C, with growth decreasing as the a_w of the medium was reduced. Maximum amounts of aflatoxins were produced at 0.99 a_w and 25°C after 5 days of incubation for 2 strains, and at 25°C and 0.96 a_w after 21 days of incubation for the third strain. Aflatoxin concentrations varied depending on the a_W and temperature interactions assayed. Two-dimensional profiles of a_W by temperature interactions were developed from these data to identify areas where conditions indicate a significant risk from aflatoxin accumulation on chickpea. This study provides useful data about conditions representing a high and a low risk for aflatoxin contamination of chickpea which is of greater concern because chickpea is destined mainly for human consumption.

P71

FROM THE TREASURE CHEST OF PLANT BIOACTIVES TO THE FUTURE OF NEW CROP PROTECTANTS FOR A SUSTAINABLE AGRICULTURE: THE POSSIBLE EXPLOITATION OF *CITRULLUS COLOCYNTHIS* L. (SCHRAD.) EXTRACTS AGAINST *ASPERGILLUS FLAVUS* AND AFLATOXINS AND OTHER STORIES.

Francesca Degola[1], M. Refifà[1], B. Marzouk[2], M. Commisso[3], S. Montalbano[4] and A. Buschini[1,4]
[1]Department of Chemistry, Life Science and Environmental Sustainability, University of Parma, Italy; [2]Laboratory of Chemical, Galenic and Pharmacological Development of Drugs, University of Monastir, Tunisia; [3]Department of Biotechnology, University of Verona, Italy; [4]Interdepartmental Centre for Molecular and Translational Oncology, University of Parma, Italy
francesca.degola@unipr.it

The world of plant extracts and natural compounds have long been regarded as a promise land for the individuation of healthy alternatives to chemical preservatives, against microbial contamination, in food and feed commodities. A plethora of aromatic and medicinal plant species have been studied from decades to explore their antimicrobial and antioxidant properties, in order to both validate their ethnobotanical use for healing microbial illnesses and assess their suitability as food preservation agents. In fact, after terrestrialization and during the following evolutionary pathway, plants had to develop chemical compounds – constitutive and/or induced – for defense against specific pathogens, therefore becoming a potential source of new natural products usable with antimicrobial purposes. Aside from the most common contaminants that could occur in foodstuff, mycotoxigenic fungal species

WMF*meets*ITALY Secretariat

Bastiaanse Communication
P.O. Box 179
3720 AD Bilthoven
the Netherlands
T +31 30 2294247
WMF@bastiaanse-communication.com
www.WorldMycotoxinForum.org