



Abstracts of the international symposium Power of Fungi and Mycotoxins in the Midst of Climate Change (PoFMy), held on 16-17 September 2022 at the University North, Koprivnica; Croatia.

PoFMy is the fifth Symposium about fungi and mycotoxins that was organised in Croatia. The first two were national symposia with international participation, both organised as one-day meetings in Zagreb in 2004 and 2008, at the initiative of Stjepan Pepeljnjak (Faculty of Pharmacy and Biochemistry, University of Zagreb). The third (Primošten, 2011) and fourth (Šibenik, 2015) PoFMy was organised by the Croatian Microbiological Society. Finally, the fifth PoFMy expanded the “mycelial network” and joint forces from the Croatian Microbiological Society, Croatian Society of Toxicology, Institute for Medical Research and Occupational Health (Zagreb), and University North (Koprivnica) organised the meeting. As the COVID pandemic forced us all to use online tools, PoFMY, like many other symposia these days, was organised in hybrid form.

The Organising Committee comprised: Bojan Šarkanj as president, Dubravka Rašić as secretary, and members Ivana Dodlek Šarkanj, Daniela Jakšić, Marija Kovač Tomas, and Manuela Zadravec. The International Program Committee members were: Maja Šegvić Klarić as president, Daniela Jakšić, Jovana Kos (Serbia), Tihomir Kovač, Maja Peraica, Dubravka Rašić, Massimo Reverberi (Italy), Alberto Rittieni (Italy), Gianfranco Romanazzi (Italy), Michael Sulyok (Austria), Bojan Šarkanj, Valentina Španić, Manulea Zadravec, and Slaven Zlajić as members, and honorary members Stjepan Pepeljnjak and Bogdan Cvjetković.

Reports from the second and third Symposium were published in a thematic issue of the *Archives*, and this time we bring you abstracts of the 5th PoFMy, including 14 invited lectures, 8 oral presentations, and 9 poster presentations.

Maja Šegvić Klarić and Dubravka Rašić

Employment of the QuEChERS/dSPE extraction procedure for sterigmatocystin (STC) and 5-methoxysterigmatocystin (5-M-STC) from beer and their detection by TLC

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Sterigmatocystin (STC) and 5-methoxysterigmatocystin (5-M-STC) are structurally related mycotoxins with cytotoxic and genotoxic properties. They are predominantly produced by fungi of the genus *Aspergillus*, series *Versicolores*. The presence of these mycotoxins was investigated in indoor environments, while the data regarding food products remains insufficient, especially for 5-M-STC. Given the high consumption of beer in Croatia and the world, the presence of STC and 5-M-STC in beer may negatively affect the health of exposed individuals. Thus, 58 different samples of beer were collected from the Croatian market, extracted by combining the QuEChERS (Quick Easy Cheap Effective Rugged Safe) extraction procedure and dispersive solid phase extraction (dSPE). The prepared extracts were analysed by thin-layer chromatography (TLC) using silica gel 60 as a stationary phase and toluene:ethyl acetate:formic acid 90 vol. % (5:4:1) as a mobile phase. Following chromatographic separation, to enhance the detection of the fluorescent spots assigned to STC and 5-M-STC, the TLC plates were dried and heated for 10 minutes in an oven at 140 °C. Additionally, the TLC plates were sprayed with aluminium chloride solution prepared in ethanol 60 vol. %. The limit of detection (LOD) was 1.3 µg/mL for STC and 3.2 µg/mL for 5-M-STC. While STC was not detected in any of the samples, 5-M-STC was detected in 46.55% of the samples. The presence of 5-M-STC was confirmed by UV-Vis spectroscopy following the extraction of the spot of interest from the TLC plate. Further analysis of the same extracts by application of more sensitive chromatographic techniques will allow for a more accurate interpretation of these observations, allow the detection of STC and 5-M-STC in the concentrations below the LOD, and enable us to quantify both metabolites.

KEY WORDS: chromatographic separation; exposure; health effects; mycotoxins; toxicity

Fumonisin B1 and B2 in maize from the Republic of Serbia over ten years

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Fumonisin (FUMs) mycotoxins present a group of hydrophilic secondary metabolites of *Fusarium* and *Aspergillus* fungal species. Food and feed contamination by FUMs is an unavoidable issue worldwide, due to their toxic effect on human and animal health. Epidemiological research has revealed that in high-exposure populations, FUMs are associated with oesophageal cancer, primary liver cancer, neural tube defects, and cardiovascular diseases. FUMs can be divided into four major groups: fumonisin A, B, C and P series. In terms of toxicity and occurrence frequency, the most abundant and toxic FUMs analogue is fumonisin B1 (FB1), which contributes to approximately 70 % of FUMs and is one of the most common mycotoxins contaminating feed and food. According to the International Agency for Research on Cancer (IARC), FB1 has been classified as a Group 2B potential carcinogenic to humans. According to the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), FUMs most often occur in maize and its products. Therefore, although maize contains quality nutrients such as vitamins A, B, and E, and many minerals, which contribute significant health benefits to the human body, there is a need for continuous monitoring and analysis of FUMs in maize and its products. Maize presents one of the most prevalent cereal crops in the world and forms a staple food in many countries, including Serbia, therefore it should be completely health-safety. In Serbia, maize covers about 35 % of the total planted area of field crops. The occurrence of FB1 and fumonisin B2 (FB2) was investigated in Serbian maize samples collected during ten years. Furthermore, the second aim was to examine the influence of weather conditions on their concentration in the investigated maize samples. The obtained results showed that a high occurrence of FB1 and FB2 was detected in maize samples from each of the examined years, regardless of the different weather conditions recorded in the examined ten years. With regard to this issue, it could be considered that the Republic of Serbia may become susceptible to problems concerning FUMs in maize, which is why there is a constant need for monitoring and determination of FUMs in maize.

KEY WORDS: *Fusarium* species; human and animal exposure; monitoring; mycotoxins contamination; weather conditions.

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