AMEND CONTINUE

Occupational Hygiene Society of Ireland and the European Chapter of the International Society of Exposure Science 2026

Submission ID

48

Title (required)

Comparative Assessment of Mycotoxin Contamination and Cytotoxic Potential in Indoor Environments: Grocery Stores and Fitness Centers in Portugal

Abstract (required)

The presence of mycotoxins in indoor environments is an emerging public health concern, particularly in specific indoor and occupational environments. Cytotoxicity assessment provides relevant information on the biological effects of complex environmental contaminant mixtures. Grocery stores and fitness centers represent distinct indoor environments with different exposure dynamics and contamination sources, requiring integrated evaluation approaches.

This study aimed to compare mycotoxin contamination and cytotoxic potential, assessed using the HepG2 and A549 cell lines, of environmental matrices from two projects conducted in Portugal: grocery stores in 2021 and fitness centers in 2024. In grocery stores, only EDC samples were analyzed, whereas in fitness centers a wider sampling campaign, using more sampling methods, was employed (EDCs, filters, and cleaning mops).

Regarding mycotoxins, fumonisins B1, B2, and B3 were identified in EDC samples from grocery stores. In fitness centers, fumonisin B2 was detected in all matrices analyzed. Cytotoxicity assessment revealed distinct responses between settings and cell lines. In grocery stores, cytotoxic effects were limited, with only one EDC sample showing a positive response in the HepG2 cell line and one EDC sample in the A549 cell line. In fitness centers, the HepG2 cell line showed positive cytotoxic responses in filter and EDC samples, while mop samples did not induce cytotoxicity. The A549 cell line exhibited positive responses across all analyzed matrices.

Overall, mycotoxins were detected in greater variety in grocery stores, while fitness centers showed higher cytotoxic potential, highlighting the need for integrated monitoring of contamination and biological effects in indoor environments.

Authors and affiliations (required)

Beatriz Monteiro 2024058@alunos.estesl.ipl.pt

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal

Filipa Figueiredo 2024099@alunos.estesl.ipl.pt

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal

cE3c - Center for Ecology, Evolution and Environmental Change, Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisbon, Portugal

Marta Dias martasdf@gmail.com

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal
NOVA National School of Public Health, Public Health Research Centre, Comprehensive Health Research Center, CHRC, NOVA University Lisbon, Lisbon, Portugal

Renata Cervantes renata.cervantes@estesl.ipl.pt

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal
NOVA National School of Public Health, Public Health Research Centre, Comprehensive Health Research Center, CHRC, NOVA University Lisbon, Lisbon, Portugal

Pedro Pena pedro.pena@essl.ipl.pt

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal
NOVA National School of Public Health, Public Health Research Centre, Comprehensive Health Research Center, CHRC, NOVA University Lisbon, Lisbon, Portugal

Magdalena Twarużek twarmag@ukw.edu.pl

Kazimierz Wielki University, Faculty of Biological Sciences, Department of Physiology and Toxicology, Chodkiewicza 30, 85-064, Bydgoszcz,, Poland

Robert Kosicki robkos@ukw.edu.pl

Kazimierz Wielki University, Faculty of Biological Sciences, Department of Physiology and Toxicology, Chodkiewicza 30, 85-064, Bydgoszcz,, Poland

Ewelina Soszczyńska eweso@ukw.edu.pl

Kazimierz Wielki University, Faculty of Biological Sciences, Department of Physiology and Toxicology, Chodkiewicza 30, 85-064, Bydgoszcz,, Poland

Susana Viegas susana.viegas@ensp.unl.pt

NOVA National School of Public Health, Public Health Research Centre, Comprehensive Health Research Center, CHRC, NOVA University Lisbon, Lisbon, Portugal

Carla Viegas (Presenting) carla.viegas@essl.ipl.pt

H&TRC - Health & Technology Research Center, ESTeSL - Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisbon, Portugal
NOVA National School of Public Health, Public Health Research Centre, Comprehensive Health Research Center, CHRC, NOVA University Lisbon, Lisbon, Portugal

Speaker biography (required)

The author holds a degree in Environmental Health from the Lisbon School of Health (Polytechnic University of Lisbon), a Master's degree in Safety and Ergonomics from the University of Lisbon, and a PhD in Occupational and Environmental Health from NOVA University of Lisbon. Her main field of expertise is occupational and environmental microbiology, and she has led and participated in several national and international research projects. Her research interests focus on occupational exposure to fungi in highly contaminated environments, the combined use of culture-based and molecular methods for exposure assessment, and the impact of climate change on microbial contamination and antimicrobial resistance (AMR). She also has extensive experience in microbiological sampling campaigns across diverse occupational settings, using integrated sampling and analytical approaches. She is a Full Professor at the Lisbon School of Health Technology and has published and presented widely in her areas of specialization.

Poster

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