

Food Micro 2022

27th
International
ICFMH
Conference

**Next Generation
Challenges
in Food
Microbiology**

**August
28-31
2022**

Megaron Athens
International
Conference Centre
ATHENS, GREECE

Hybrid

Abstract Book

Organized by



International
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Food Microbiology
and Hygiene

Under the auspices



Hellenic Scientific
Society of
Mikrobiokosmos

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Controlling and predicting microorganisms in food ecosystems

O6.2

Modes of action of rosemary and *Debaryomyces hansenii* against *Aspergillus westerdijkiae* in dry-cured meat matrix

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Aspergillus westerdijkiae is an ochratoxin A (OTA) producer mould in dry-cured meat products. Natural strategies to control ochratoxigenic moulds using biocontrol agents (BCAs) are currently in the spotlight. The aim of this study was to test the potential antiochratoxigenic activity of rosemary leaves (R), rosemary essential oil (REO) and *Debaryomyces hansenii* FHSCC 253H (Dh) as BCAs against *A. westerdijkiae* in a dry-cured fermented sausage-based medium. The mechanisms involved in their effect were also analysed by Proteomics, using a Q-Exactive Plus. Three batches were carried out: a control without BCAs, another one with R+REO and one with Dh. R (2 g/kg) and Dh (100 µL of 10⁶ cells/mL) were added to the medium and REO was added on the casing, which was put onto the medium surface to simulate the real product. Significant OTA reductions of 73.87 % and 88.26 % were provoked by R+REO and Dh, respectively. Proteomics revealed that the BCAs affected to proteins linked to OTA biosynthesis and the cell wall integrity pathway (CWI). Proteins from PKS ER domain, directly involved in mycotoxin biosynthesis, were diminished in abundance by both treatments (R+REO or Dh). R+REO altered the CWI by decreasing proteins related to the synthesis of cell surface polysaccharides and actin assembly, and increasing the cell wall protein PhiA, involved in conidiogenesis. Dh decreased the NRPS protein, indispensable for the formation of the OTB, an OTA precursor, and affected to the CWI by lowering the abundance of proteins associated with the actin binding, the synthesis of polysaccharides and the response against cell wall stress agents. Therefore, rosemary and *D. hansenii* FHSCC 253H are potentially useful to minimise the hazard posed by *A. westerdijkiae* in dry-cured fermented sausages within a HAPPC framework.

This research was funded by Foundation for Science and Technology (FCT/MCTES to CIMO, UIDB/00690/2020). Fondo Europeo de Desarrollo Regional-“Una manera de hacer Europa” (GR18056). Grant PID2019-104260GB-I00 funded by MCIN/AEI/ 10.13039/501100011033. Grant BES-2017-081340 funded by MCIN/AEI/ 10.13039/501100011033 and by “ESF Investing in your future”. Grant UNEX-AE-3394 funded by MCIN/AEI/ 10.13039/501100011033 and by “ERDF A way of making Europe”. Date of PhD graduation: 14/12/2021