391. *Penicillium crustosum* as a potential OTA producer – new insights from whole-genome sequencing of strain MUM 16.125

Carla Santos[1], Miguel Pinheiro[2], Teresa Dias[1], Célia Soares[1], Gabriela M.R. de Moura[2], Nelson Lima[1]

[1]Micoteca da Universidade do Minho (MUM), CEB-Centre of Biological Engineering, University of Minho, Braga, Portugal; [2]Institute of Biomedicine - iBiMED, Department of Medical Sciences, University of Aveiro, Aveiro, Portugal

Ochratoxin A (OTA) is a well-studied mycotoxin that poses severe health risks. OTA is mainly produced by *Aspergillus* and *Penicillium* species associated with food spoilage and it is present in a wide diversity of food and feed products. Recent studies have reported the presence of OTA in food matrices where known OTA producers are not present[1,2]. For that reason, other species such as *P. crustosum* are now being considered. A recent study using comparative genomic analysis[3] clarified the OTA biosynthetic gene cluster composition.

In order to gain insight into the secondary metabolism of *P. crustosum*, this study aimed to sequence and explore the complete genome of strain MUM 16.125. This strain was isolated from cheese rind sample contaminated with OTA in which no known OTA producers were present[1].

The genome assembly comprises 199 contigs with a total length of 30.95 Mb and contains 10975 predicted protein-coding genes. In total, 109 gene clusters potentially related with secondary metabolism were identified, including putative gene clusters for penitrem, clavaric acid or naphthopyrones biosynthesis. Nevertheless, no evidence of an OTA biosynthetic gene cluster was found. A total of 83 complete and 49 partial protein sequences from published OTA biosynthetic genes from 11 *Aspergillus* and 3 *Penicillium* species were queried against the predicted *P. crustosum* proteins. Only 3 strong matches were found (to a short partial *P. verrucosum* PKS and 2 *P. thymicola* chloroperoxidases) but matches to complete key genes were absent.

Considering these findings, it appears that strain MUM 16.125 lacks the most common genetic pathway to produce OTA, providing important information relevant to understand the role of *P. crustosum* as putative OTA producer. Nevertheless, the additional secondary metabolism gene clusters found (such as penitrem, clavaric acid or naphthopyrones) highlight the potential of this strain for metabolite production, including other mycotoxins or compounds with antioxidant, anticancer or antibiotic properties.

References:

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2. Vega, F.E., et al. **2006**. *Mycologia* 98, 31-42.
3. Ferrara, M., et al. **2020**. *Front. Microbiol.* 11, 581309.

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