Under the Patronage of His Excellency

Dr. Mahmoud Abbas

President of Palestine State

The 10th International Palestinian Conference of Laboratory Medicine

The 15th Arab Conference of Clinical Biology

CONFERENCE BOOK

PALESTINE 2018

April 18-21, 2018

Ramallah, Palestine

PENICILLIUM SPECIES IDENTIFICATION AND NEW INSIGHTS ON MYCOTOXINS IN FOOD COMMODITIES (APPLES, CHILLI AND CHEESE)

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Keywords: Ochratoxin A, Patulin, Penicillium.

Among certain groups of filamentous fungi that produce mycotoxins, relevant contaminates in food, the genus *Penicillium* is of great importance. *Penicillium* is ubiquitous in nature and inevitable, although it can be controlled from the field to the fork. Mycotoxins are fungal secondary metabolites that cause sickness or death in people when ingested, inhaled, and/or absorbed. Major mycotoxins associated with common penicillia are: Ochratoxin A (*P. verrucosum* and *P. nordicum*), patulin (*P. expansum*), citrinin (*P. expansum*), cyclopazonic acid (*P. camemberti*), penicillic acid (*P. radicicola)* and secalonic acid D, F (*P. griseofulvum*). Penicillia identification is time-consuming and sounder polyphasic identification, which includes phenotypic and genotypic approaches, is recommended. However, in many laboratories, the standard character for identification is still morphology. Taking this into account, results from *Penicillium* species isolated from Tunisian apples, Chilean traditional chilli (Merkén), Italian cheeses and their mycotoxin profiles (patulin and ochratoxin A) will be presented in this work. For morphological analyses, isolates were inoculated in triplicate in different media. Fungi grown in MEA for colony and microscopy analyses were used. Multilocus sequence analysis was performed through comparison of partial β-tubulin, calmodulin and ITS with sequences available in GenBank. Specific primers for genes involved in the mycotoxins pathways were used for PCR amplification. After extraction the mycotoxins were quantified using HPLC-FLD (fluorescence detection). From Tunisian apples isolates, a novel species *Penicillium tunisiense* of section *Ramosa* is proposed. This is not a patulin producer with the *idh* gene negative in contrast with the other dominant *P. expansum* isolates. In addition, ochratoxigenic strains *P. verrucosum and P. crustosum* were isolated from chilli and cheese samples, respectively, and characterized with genes involved this mycotoxin production. Our findings show that mycotoxigenic *Penicillium* strains, as food contaminants, remain an important field of study and more knowledge needs to be learned.