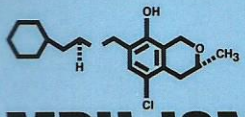

MPU-ISM

Joint International Congress

14th MEDITERRANEAN PHYTOPATHOLOGICAL UNION

International Society of Mycotoxicology

(Mediterranean Branch)

August 25-29, 2014 ISTANBUL-TURKEY

TÜBİTAK

GTD

TMMOB GIDA MÜHENDİSLERİ ODASI

"Plant health management for ensuring food security, safety and quality in the Mediterranean area: Challenges and prospects"

Day 4: Thursday, 28 August	
09:00-10:45	**Plenary Session: Challenges and prospects** **Chair: Maria Ivone E. Clara**
09:00-09:30	Tools and strategies to mitigate the effect of mycotoxins **Armando Venancio** (Portugal)
09:30-10:00	Almond witches' broom phytoplasma, an emerging lethal disease of stone fruits with potential threat to the Mediterranean area **Yusuf Adib Abou-Jawdah** (Lebanon)
10:00-10:30	Virus diseases affecting the Mediterranean stone fruit industry **Kadriye Çağlayan** (Turkey)
10:45-11:15	Tea/Coffee Break
	Phytopathology Session:Diagnostics and detection methods of plant pathogens **Chair: Dimitris Tsaltas &** **Yusuf Adib Abou-Jawdah**
11.15-11:30	Next generation sequencing approaches to identify t-dna tagged genes in *Colletotrichum higginsianum* pathogenicity mutants **Antonios Zambounis** (France)
11:30-11:45	Hyperspectral discrimination of *Erwinia amylovora* infections in pear plants **Yaseen Alnaasan** (Italy)
11:45-12.00	On the biology of four isolates of *Nattrassia mangiferae* nattrass: the effect of media **Wafa Nori** (Sudan)
12:00-12:15	Innovative methods of biological indexing for the efficient and fast detection of citrus virus and virus-like diseases **Khaled Djelouah** (Italy)
12:15-12:30	Development of lamp methodology for *Monilinia* spp. Detection and the correlation with environmental parameters **Melissa Si Ammour** (Italy)

TOOLS AND STRATEGIES TO MITIGATE THE EFFECT OF MYCOTOXINS

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In food safety management there are many hazards which have to be considered. Among them are mycotoxins, which are chemical agents produced in foods by filamentous fungi. Human exposure to mycotoxins can occur by a direct route (consumption of food contaminated by the fungus) or by an indirect route (consumption of animal products contaminated through animal feed). The need to control properly the presence of these toxic agents in foods presents challenges for their prevention and removal from food commodities. Many tools or strategies may be employed to reduce mycotoxin levels in food commodities. The most important are the preventive ones, since they avoid commodities losses in the first place. In some instances, the early detection of mycotoxins is needed, so that the correct preventive action may be applied. However, absence of mycotoxins was not yet achieved, making the need of further actions for the reduction of contamination. These measures, which are technologically diverse, are usually classified into physical, chemical or biological. Physical methods consist of segregation, sorting, cleaning, peeling and others that aim to remove the most contaminated fractions of the commodities. Chemical methods consist of the use of compounds to destroy toxins, as it is the case of ozone (ozonation). Finally, biological methods use microorganisms to decompose, transform or adsorb toxins from contaminated products or to avoid the toxic effects when mycotoxins are ingested. Most of the latter technologies are mediated by enzymes, making them more specific than most physical and chemical methods. As a preventive example, the direct detection of fungal pathogens causing internal infection in food tissues without laborious previous treatment is an urgent need, and the use to tools based on matrix-assisted laser desorption / ionisation time-of-flight mass spectrometry (MALDI-TOF MS) analysis is a promissing solution. MALDI-TOF MS has demonstrated

high potentiality on the identification of filamentous fungi at species level by analysing the intact fungal cells. However, the direct detection of fungal pathogens causing internal infection in agricultural commodities is still in its infancy. The use of lactic acid bacteria (LAB) is seen as solution to reduce the exposure to dietary mycotoxins because of the unique mycotoxin decontaminating characteristic of some LAB. Either by the adsorption of mycotoxins to the cell wall or by their degradation into less toxic compounds it is possible to reduce the exposure to these contaminants. In the case of ochratoxin A (OTA), to the best of our knowledge, no reports have yet clearly demonstrated its biodegradation by LAB. Previous studies have either concluded that OTA was adsorbed onto the LAB cell walls or did not allow elucidate the mechanism of elimination of OTA. From a perspective of implementing a food safety model, some recent advances in the above mentioned strategies to mitigate mycotoxin contamination will be presented. The authors thank the FCT Strategic Project PEst-OE/EQB/LA0023/2013 and FCT research project PTDC/AGR-TEC/3900/2012.