Mycokey

Integrated and innovative key actions for mycotoxin management in the food and feed chain

Lay summaries

Knowledge transfer to stakeholders

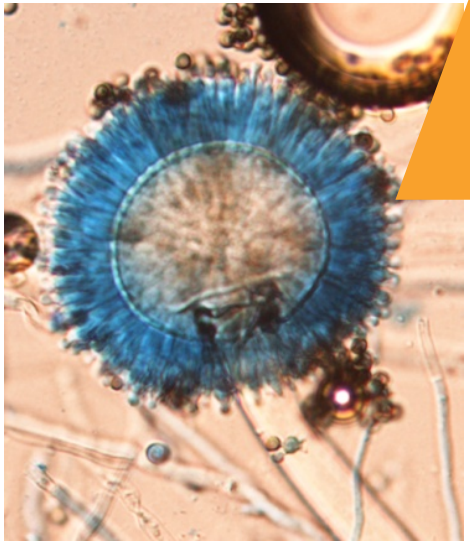
MycoKey

European Commission

HORIZON 2020

UNIVERSITÀ CATTOLICA del Sacro Cuore

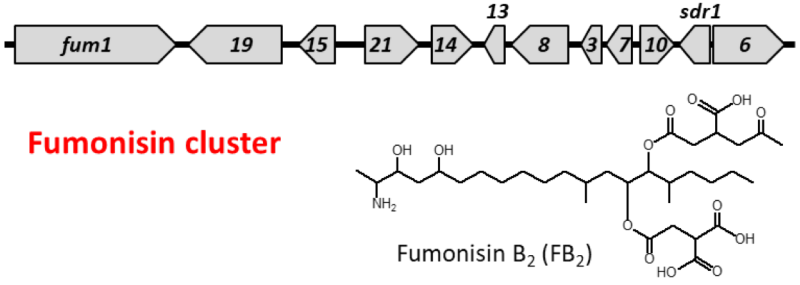
Variation in Fumonisin and Ochratoxin Production Associated with Differences in Biosynthetic Gene Content in *Aspergillus niger* and *A. welwitschiae* Isolates from Multiple Crop and Geographic Origins



The black aspergilli *A. niger* and *A. welwitschiae* are used in fermentation of food and beverages. However, concerns about the safety of these fungi have been raised with the discovery that some isolates can produce the mycotoxins FBs and OTA. Both species exist as mixed populations of FB-producing or FB-nonproducing individuals, as well as OTA-producing or OTA-nonproducing individuals. Differences in homologs of the *ota* and *fum* clusters in *A. niger* and *A. welwitschiae* were analyzed.

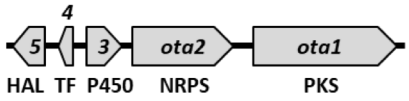
APPROACH

A strategy to reduce the impact of mycotoxins in the food and feed chains is to monitor mycotoxicological risks during the growing season in field and on-line way at farm level.
Genotype characterization of mycotoxin gene clusters in producing and nonproducing fungi is the basical step for development of on-site detection kit specific for toxigenic fungi.

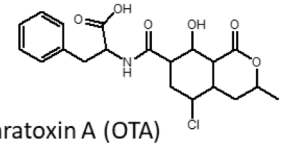


Fumonisin cluster

Fumonisin B_2 (FB_2)



Ochratoxin cluster



Ochratoxin A (OTA)

Characterization of mycotoxins biosynthetic genes

Identification of DNA markers

Development of detection kits for toxigenic fungi

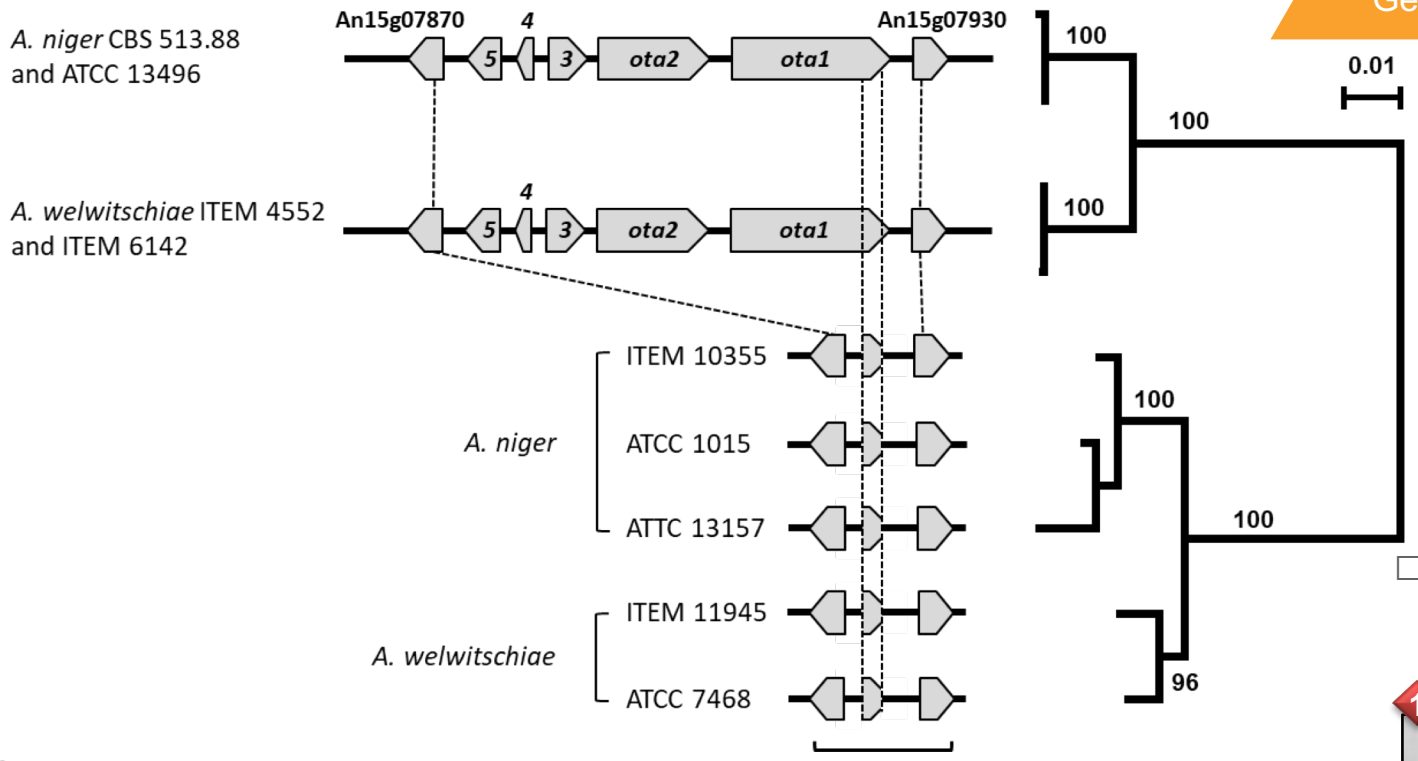
Keep track of mycotoxicological risks

research

Identification of strategy

exploitation

OUTCOMES



Genetics and Biodiversity

- ☐ Genome sequence data indicate that *fum* cluster is partially deleted in FB-nonproducing isolates of *A. welwitschiae*, whereas the *fum* cluster is intact in FB-nonproducing isolates of *A. niger* (which might produce FBs under conditions other than those employed in the current study and other studies)
- ☐ Genome sequence data indicate deletion of DNA within the *ota* cluster region is almost identical in OTA-nonproducing strains of A. niger and *A. welwitschiae*.

Feasibility of data

- ☐ Development of A loop-mediated isothermal amplification (LAMP) assay for rapid detection of fumonisin producing Aspergillus species

Frontiersi n Microbiology, 2016, 7, 1412;
doi: 10.3389/fmicb.2016.01412