

Characterisation of mycoflora and aflatoxigenic fungi from portuguese almonds: from production to comercialisation

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Aflatoxins are among the most carcinogenic natural compounds known, and have been frequently detected in numerous agricultural commodities, nut fruits being among the most contaminated ones. These toxins are a result of the secondary metabolism of fungi belonging to the genus *Aspergillus* Section *Flavi*, namely *Aspergillus flavus*, *A. parasiticus* and *A. nomius*. The early detection of aflatoxigenic fungal contamination and the preventive control of aflatoxin production seems to be the only viable way to respond to the rigorous limits imposed by EU legislation.

In Portugal, knowledge on mycoflora and mycotoxigenic profiles of almonds is scarce. Our objective was to characterise portuguese almonds in respect to mycoflora, with strong emphasis on aflatoxigenic fungi, from production to commercialization.

Various samples of almonds were collected from the field, as well as during storage and processing. Environmental data have also been recorded. Samples were plated directly on MEA+10% NaCl and all fungi belonging to the genus *Aspergillus* isolated and identified to the group or species level. All *Aspergillus* belonging to Section *Flavi* were further characterised based on their mycotoxigenic profile, with the aim of identifying aflatoxigenic and non-aflatoxigenic strains.

Fungal diversity and relative frequencies of *Aspergillus* spp. were determined for the various samples and correlated with environmental conditions. We have observed a progressive reduction on fungal diversity of almonds from the field to the end of processing, as well as an increase of the frequency of more xerophilic fungi, including *Aspergillus* Section *Flavi*. Concerning the latter, we report that *Aspergillus parasiticus* are predominantly aflatoxigenic and *Aspergillus flavus* are predominantly non-aflatoxigenic. Other less common species have also been identified.

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