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Identification of black aspergilli group based on a polyphasic approach, including MALDI-TOF ICMS

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Black aspergilli is a group of filamentous fungi comprised by species of *Aspergillus* section *Nigri*. They can be isolated from different environments however the main habitat of these species is the soil. According to Samson *et al.* (2007) there are 19 species of *Aspergillus* section *Nigri* accepted. The species identification must be delineated based on a polyphasic approach, including morphology, physiology, profile of secondary metabolites and molecular biology (Samson and Varga, 2009). Additionally, according to Santos *et al.* (2010a, 2010b) it is clear that spectral analyses add value to the polyphasic approach. Matrix-Assisted Laser Desorption/Ionisation Time-Of-Flight Intact Cell Mass Spectrometry (MALDI-TOF ICMS) is a spectral technique that analyses the chemical molecular mass of the microbial cellular composition providing rapid and discriminatory fingerprints for identification. This work aimed to perform a polyphasic approach based on morphological, biochemical and spectral analysis by MALDI-TOF ICMS for the characterisation and identification of the section *Nigri*. Seventy-four isolates of the section *Nigri* deposited at University of Recife Mycology (URM) Culture Collection were analysed. Additionally, 12 type strains of the section *Nigri* deposited at Micoteca da Universidade do Minho (MUM) Culture Collection were used as reference for MALDI-TOF ICMS studies. The data obtained from the polyphasic approach indicates that MALDI-TOF ICMS results corroborate with those data obtained using classical taxonomy and biochemical analyses. Overall, from the 74 cultures, 75% were finally identified as *A. niger*, 15% as *A. japonicus*, 5% as *A. carbonarius*, 4% as *A. aculeatus* and 1% as *A. foetidus*. Moreover, the biochemical analyses showed that from the whole population of *A. niger* 20% and 13% were characterised as ochratoxin A (OTA) and fumonisin B₂ producers, respectively. *A. carbonarius* and *A. foetidus* were in total OTA producers. The 74 isolates belonging to section *Nigri* deposited at URM were deeply studied and their associated information update and requalified.

Samson *et al.* (2007). *Stud. Mycol.* 59: 129-145. Samson *et al.* (2009). *Med. Mycol.* 1-8. Santos *et al.* (2010a). *J. App. Microbiol.* 108: 375-385. Santos *et al.* (2010b). *Res. Microbiol.* 161: 168-175.

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