Introduction:
Aspergillus is a large genus, with a complex taxonomy. The genus is easily identified by its characteristic conidiophore, but species identification and differentiation is complex, mainly because it is traditionally based on a range of morphological features. Aspergillus subgenus 

Circumdati section Flavi, also referred to as the A. flavus group, has attracted worldwide attention for its industrial use and toxigenic potential. Section Flavi is divided into two groups of species. One includes the aflatoxigenic species A. flavus, A. parasiticus and A. nomius, which cause serious problems in agricultural commodities, and the other one includes the non-aflatoxigenic species A. oryzae, A. sojae and A. tamarii, traditionally used for production of fermented foods. Species from A. flavus group are morphologically and genetically very similar, and are therefore difficult to differentiate by both cultural and molecular methods. Matrix Assisted Laser Desorption Ionization Time-of-Flight (MALDI-TOF) Mass Spectrometry has already shown high potentialities in discriminating very closely related taxa.

Aims:
This work intended to discriminate A. flavus group strains using MALDI-TOF MS. Results are compared with those previously obtained by conventional and molecular methods.

Material and Methods:
A group of 29 Aspergillus Section Flavi strains isolated from winemaking grapes were used.

The strains were characterised using polyphasic approach. The morphology with emphasis in conidial wall ornamentation was regarded as the primary diagnostic character for separation of A. flavus from A. parasiticus. The selective media Aspergillus Flavus and Parasiticus Agar (AFPA) and Coconut Agar (CCA) were used to complete this part. The aflatoxins (G1 and B1) as well as the cyclopiazonic acid (CPA) were analysed. The genes afD (nor1) and afQ (orA1) were studied using the correspondent probes and amplified by PCR. The spectral analysis was done by Matrix Assisted Laser Desorption Ionization – Time Of Flight (MALDI-TOF-MS) and the spectra analyzed using SARAMIS software. The strains A. flavus MUM 92.01, 00.06, 00.06, 00.09 and “Brasil strain”, A. parasiticus MUM 92.02 were used as reference strains. The A. ochraceus strain 06AAs01 was used as outgroup.

Results:

Conclusions:
• The different methods used to identify A. flavus and A. parasiticus were well correlated.
• MALDI-TOF MS analysis shows potential to discriminate between these two taxa and the spectral profiles produced for each organisms were consistent.

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