



## Genetic characterization of Brazilian strains of *Aspergillus flavus* using DNA markers

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**ABSTRACT.** The *Aspergillus* genus belongs to a filamentous fungal group characterized by wide dispersion in the environment. Some species are associated with diseases, especially in immunocompromised patients, while others are of economical importance due to aflatoxin production or biotechnological applications. Its species identification is nowadays performed by traditional techniques combined with molecular markers, resulting in a higher efficiency of isolate characterization. In the present study, internal transcribed spacer, inter-simple sequence repeats (ISSR), and random amplified polymorphic DNA (RAPD) molecular markers were used, with the aim of genetically characterizing strains of *Aspergillus flavus* and strains of other species of the *A. flavus* group. High genetic diversity was revealed by RAPD and by ISSR, in which the use of the (GACA)<sub>4</sub> primer yielded a higher diversity than with the (GTG)<sub>5</sub> primer, although the latter showed a characteristic banding profile for each species. These data were used to create a similarity matrix for the construction of dendrograms by means of the UPGMA method. The ISSR and RAPD profiles showed that among the strains previously identified as *A. flavus*, one should be *A. oryzae*, one *A. parasiticus* and two *A. tamarii*. On the other hand, a strain previously identified as *A. parasiticus* should be *A. flavus*. All these strains

were retested by traditional methods and their new species identification was confirmed. These results strongly support the need for using molecular markers as an auxiliary tool in differentiating fungal species and strains.

**Key words:** *Aspergillus flavus*; Genetic diversity; Molecular markers; Random amplified polymorphic DNA; Internal transcribed spacer; Inter-simple sequence repeats