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Apresentação

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Título

O SIICUSP, é uma ótima oportunidade para alunos de graduação da USP e oriundos de diferentes Universidades, expor os resultados obtidos de trabalhos de pesquisa dentro de um ambiente próprio. O simpósio acontece anualmente e é dividido em quatro grande área do conhecimento. Todos os bolsistas de Iniciação Científica e Iniciação Tecnológica dos Programas PIBIC/CNPq, PIBITI/CNPq, RUSP e Santander tem o compromisso de apresentar os resultados obtidos de seus trabalhos de pesquisa no Simpósio.

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USING A POLYPHASIC APPROACH TO IDENTIFY WILD BRAZILIAN FUNGAL STRAINS

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Aim

The species must be delineated based on a polyphasic approach, including morphology, physiology, profile of secondary metabolites and molecular biology [1]. According to Santos et al. [2;3] it is clearer that spectral analyses add value to the polyphasic approach. This work aimed to perform a polyphasic approach based on morphological, biochemical and spectral analysis by MALDI-TOF ICMS for identify Aspergilli isolates from different environments of Brazil.

Methods

Thirteen isolates of *Aspergillus* deposited at Filaments Fungi Collection of Ribeirão Preto (CFF-RP) were analysed. Media Czapeck Dox Agar (CZ) and Malt Extract Agar (MEA) at 30ºC were used for the morphological identification. Biochemical characterisation (production of ochratoxin A and fumonisin B2) was performed by HPLC. The MALDI-TOF ICMS analyses were performed on an Axima LNR system (Kratos Analytical, Shimadzu, Manchester, UK) equipped with a nitrogen laser (337nm), using a mass range from m/z=2000 to 20000 Da, and *Escherichia coli* strain DH5$^{\alpha}$ for external calibration. Then fungi classification was performed on the SARAMIS software (AnagnosTech mbH, Postdam-Golm, Germany).

Results

The biochemical analyses showed that just one strain was ochratoxin A (OTA) producer. In the other hand, any isolate produced fumonisin B2 (FB2). In the MALDI-TOF ICMS analyses, only *Aspergillus fumigatus* species was successfully identified by SARAMIS™ software. According to molecular biology analyses ca. 77% (10 isolates) of all analysed strains were identified as *Aspergillus fumigatus*.

Conclusions

Join altogether morphologic, biochemical, MALDI-TOF and molecular biology analyses it is possible to conclude that spectral analysis was the faster technique between the 4 tools used in this polyphasic approach. However, the overall results show that spectral approach using MALDI-TOF ICMS needs to be supported by molecular biology analysis because of the spectral database does not covers all growth conditions and the whole biodiversity. Finally, these results contribute to knowledge about the microbial diversity from Brazil´s environment, showing the importance of the culture collections and the identification by a polyphasic approach.

References

[1] Samson, RA; Varga, J; Medical Mycology 47: 13-20, 2009.

[2] Santos C; Paterson, RRM; Venâncio A; Lima, N. Journal of Applied Microbiology, 108: 375-385, 2010a.

[3] Santos, C; Fraga, ME; Kozakiewicz, Z; Lima, N. Research in Microbiology, 161: 168-175.