

Title: INHIBITION OF GROWTH AND OCHRATOXIN A PRODUCTION IN *Aspergillus* SPECIES BY FUNGI ISOLATED FROM COFFEE BEANS

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Abstract:

Ochratoxin A (OTA) is a mycotoxin found in several agricultural commodities that may pose food safety risks. OTA, produced by *Aspergillus* and *Penicillium* fungi, is nephrotoxic, immunotoxic and hepatotoxic and can also be carcinogenic. Some countries have legislation limiting the concentration of OTA in food. Preventive measures should be taken to address this problem, which include avoiding and preventing fungal growth and OTA production. Biological methods have been increasingly considered as an alternative to physical and chemical treatments. In this study, eight fungal strains (two strains of *Rhizopus oryzae*, and one strain of each *Lichtheimia ramosa*, *Aspergillus westerdijkiae*, *Aspergillus niger*, *Aspergillus tamarii*, *Aspergillus flavus* and *Aspergillus fumigatus*) isolated from coffee beans were evaluated for their abilities to inhibit growth of *Aspergillus ochraceus*, *Aspergillus westerdijkiae*, *Aspergillus carbonarius* and *Aspergillus niger* and production of OTA. For this, the growth radial test and High Performance Liquid Chromatography were used. All eight fungi strains tested were able to inhibit growth of the four *Aspergillus* species and OTA production, where strain *A. niger* C187 showed the best results in both the tests. Strain *L. ramosa* C118 showed the lowest growth-reducing potential, while the rest of the fungal strains had a growth reducing potential higher than 70% against all *Aspergillus* species tested. Regarding OTA production, the strains *L. ramosa* C118 and *A. flavus* C176 completely inhibited the mycotoxin production by *A. ochraceus* and non-toxicogenic strain *A. niger* C187 completely inhibited OTA production by *A. niger*. According to the published data, the OTA degradation activity of the *Aspergillus* strains could be due to carboxypeptidase. Our findings indicate that the strains tested can be used as an alternative means to control growth of OTA-producing fungi and production of this mycotoxin in coffee beans.

Keywords: Fungi, Coffee beans, *Aspergillus*, Growth Inhibition; Ochratoxin production

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