TITLE: INCIDENCE OF FUNGI OF THE GENUS *Aspergillus* AND IDENTIFICATION OF *Aspergillus* SECTION *Nigri* IN COMMERCIALIZED GARLIC IN BRAZIL

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ABSTRACT:

Garlic, a product widely used in cooking, constitutes risk factor for human health, as it can be contaminated by microorganisms such as fungi. The post-harvest stages, including the commercialization methods, are favorable factors for the development of fungi, reducing the quality of the product. The garlic contamination can occur by some species of the genus *Aspergillus*, which under favorable conditions can produce mycotoxins, such as ochratoxins, aflatoxins and fumonisins. However, not all isolates of a given species have potential for mycotoxin production. Within the *Nigri*, *Flavi* and *Circumdati* sections of the genus *Aspergillus*, some species have very similar morphological characteristics. In contrast, some species of *Aspergillus*, such as *A. niger*, are potential producers of enzymes with biotechnological interest. The present work aimed to verify the incidence of *Aspergillus* in commercialized garlic in Brazil and to identify the species *A. niger* / *A. welwitschiae* belonging to the section *Nigri*. A total of 34 garlic samples were analyzed. Pieces of garlic bulbs (5 grams) were decontaminated superficially with 0.4% NaClO for 2 min, followed by washing with distilled water for 2 min, plated in DG18 medium and incubated at 25 ° C for 7 days. Identification of fungal genera was determined morphologically. Representatives of the section *Nigri* of the genus *Aspergillus* were isolated for *A. niger* / *A. welwitschiae* identification and fumonisin (*fum8*) and ochratoxin A (*pks* and *radh*) potencial production by multiplex PCR (mPCR). Of the 34 garlic samples, 2049 fungal isolates were found. It was observed that 94.1% of the garlic samples were contaminated with fungi of the genus *Aspergillus*. The main fungal genera were *Aspergillus* 50.3%, *Penicillium* 34.7% and *Fusarium* 11%. Within the genus *Aspergillus*, there was a predominance of *Aspergillus* section *Nigri*, 63% (649/1031), followed by 19.5% (201/1031) belonging to the section *Flavi* and 17.5% (181) to the section *Circumdati*. Until now, 27 isolates of *Aspergillus* section *Nigri* have been selected for mPCR evaluation. The 27 isolates were identified as *A. niger* / *A. welwitschiae*. All the selected isolates were potentially negative (*pks* and *radh*) for ochratoxin A (OTA) production, 12 isolates were potentially positive (*fum8*) for fumonisin production (FUM) and 15 isolates were negative for both mycotoxins. The 15 negative OTA and FUM isolates will be used for further analysis on the potential production of lipases, laccases and amylases.

Keywords: garlic, *Aspergillus*, isolation