

**TITLE:** ASSESSMENT OF ALLYL ISOTHIOCYANATE EFFECT ON OCHRATOXIN A PRODUCTION IN GREEN COFFEE

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**ABSTRACT:**

Brazil is one of the biggest grain producers worldwide, and fungi growth and mycotoxins presence are responsible for significant losses. The use of natural compounds has been proposed as antifungal additives. The aim of this work was to evaluate the use of allyl isothiocyanate (AITC) as an alternative to mitigate fungi growth and ochratoxin A production. Three species of *Aspergillus* known as OTA producers (*Aspergillus ochraceus*, *A. lacticoffeatus* and *A. sclerotiumniger*) were used. The halo inhibition test was used to evaluate the inhibition of fungi growth. PDA plates were inoculated with  $1.10^4$  spores/mL, conditioned in hermetic bottles with AITC in concentration ranged from 0.00312 to 0.5  $\mu\text{L/L}$ , and incubated for 5 days at 25 °C. After incubation, halos were measured with a pachymeter and compared to the control. Then, green coffee beans (25g;  $10^4$  spores/g) were treated with 0,25; 1,5; 9 e 54  $\mu\text{L/L}$  AITC in hermetic bottles, for 35 days (25°C) to evaluate the inhibition of fungi development and OTA production. All the assays were conducted in triplicate. OTA in green coffee beans was determined by clean-up using immunoaffinity column, and quantified by LC-FLD with method previously validated in our lab. There was full halo inhibition from 0.25  $\mu\text{L/mL}$  for the three strains tested. In coffee, the fungi growth was completely inhibited with dosis  $\geq 9\mu\text{L/L}$  during 35 days. The results showed that lower levels of AITC (0.25 and 1.5  $\mu\text{L/L}$ ) favored the OTA production while 9  $\mu\text{L/L}$  full inhibited its production. There were significant differences among the replicates, possibly by the differences on the sizes and beans integrity. AITC is a GRAS compound, and could be used to avoid mold growth and mycotoxins production in green coffee. However, further studies should be conducted to evaluate AITC effect on the production of OTA in green coffee beans.

**Keywords:** Ochratoxin A, coffee beans, AITC, *Aspergillus*.

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