

TOXIGENIC FUNGI IN COFFEE SAMPLES: A MENACE TO PUBLIC HEALTH

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Introduction

Mycotoxin contamination was reported to occur in some food and commodities, such as coffee, particularly due to the presence of toxigenic fungi such as *Aspergillus*, *Penicillium* and *Fusarium* spp. [1]. *Aspergilli* are known to produce high levels of mycotoxins, such as ochratoxin and aflatoxin. *Aspergillus ochraceus* has been proposed as the major cause of ochratoxin A contamination in coffee beans [2].

Aim of study

The aim of this work was to evaluate the prevalence of *Aspergillus* sections *Circumdati*, *Flavi* and *Fumigati* in 28 green coffee samples to be used by Portuguese coffee industry, from *Coffea arabica* (Arabica coffee) and *Coffea canephora* (Robusta coffee) species from different origins.



Figure 1 – *Coffea arabica* and *Coffea canephora* beans

Materials and Methods

Twenty grams of coffee beans were resuspended in 180 mL of distilled water and homogenized during 20 minutes at 200 rpm. The washed supernatant was then processed for DNA extraction using the ZR Fungal/Bacterial DNA MiniPrep Kit and the above mentioned *Aspergillus* sections were detected through real-time quantitative PCR (qPCR).

Results and Discussion

Molecular tools were able to successfully identify the presence of fungal contamination from the *Fumigati* and *Circumdati* sections. From the 28 coffee samples analyzed, 27 were contaminated by *Fumigati* section (59.3%), followed by *Fumigati* and *Circumdati* simultaneously (37.0%) and *Circumdati* alone (3.7%).

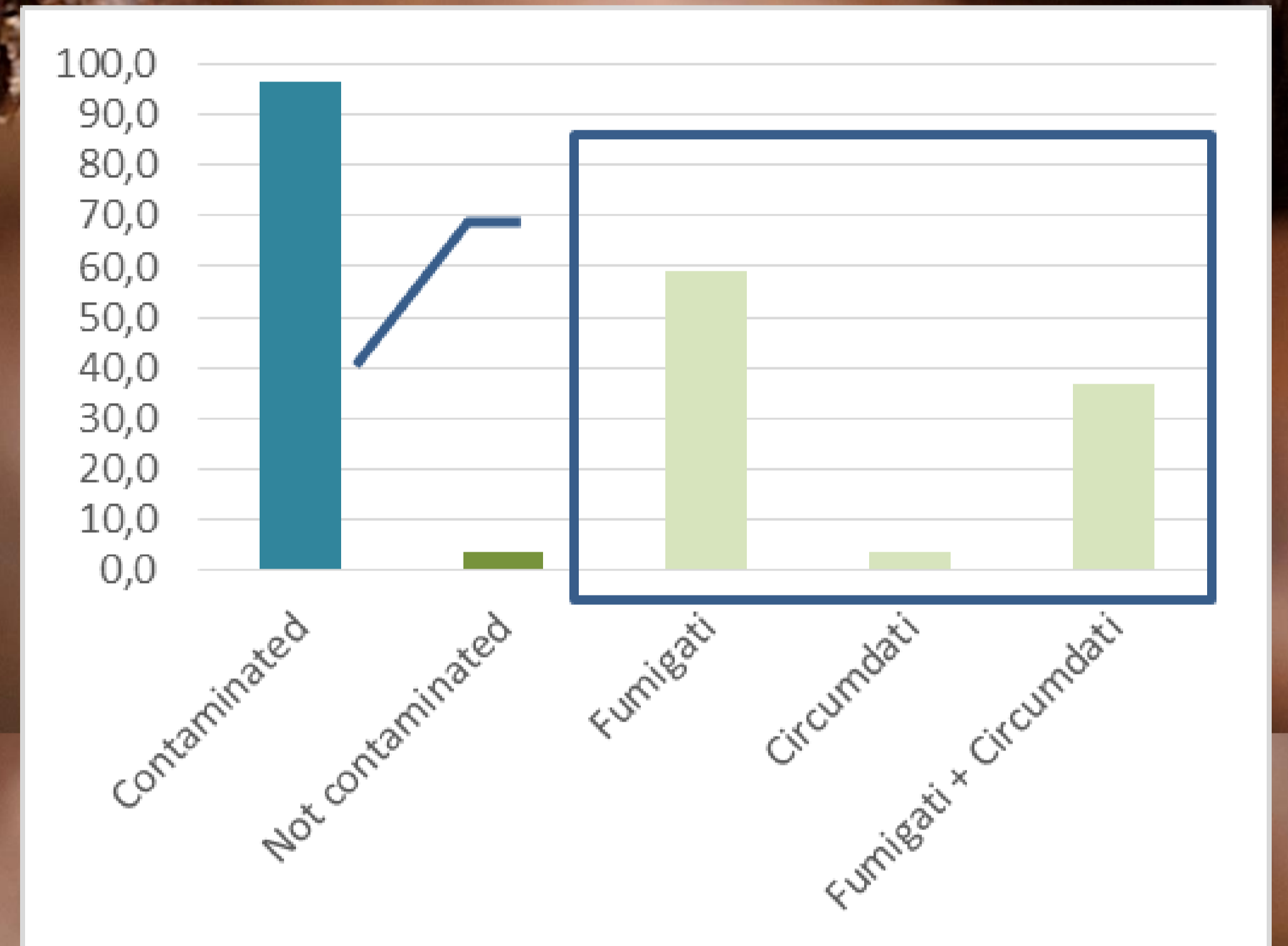


Figure 2 –Prevalence of *Aspergilli* sections identified

Data obtained most probably indicates the presence of ochratoxin^{1,2} and gliotoxin³, which will be confirmed in future studies.

Conclusions

Fungal co-contamination in coffee beans can be indicative of the presence of multiple mycotoxins. Further studies should address this issue directly linked to coffee consumption. Fungal burden and mycotoxin presence should also be analysed in roasted coffee.

References

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