EVALUATION OF AZOLE-RESISTANT MYCOBIOTA AND MYCOTOXINS PROFILE IN TEA

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Background

- Tea (infusion of the *Camellia sinensis* leaves) is one of the most common beverages worldwide, namely, black tea and green tea (1).
- Fungal contamination of tea by mycotoxins (produced by filamentous fungi such as *Aspergillus)* confer potential risks to human health and can cause serious diseases (2).
- Continued exposure of *Camellia sinensis* to fungicides in conventional agricultural can promote the development of azole resistance among fungal species, such as *A. fumigatus* (3).
- Azole resistance limits therapeutic options against fungal diseases (e.g. aspergillosis), representing a threat to public health.

Study Goals

- Identify and quantify the mycobiota through microbiological and molecular analysis.
- Characterize the susceptibility profile of fungi to antifungal drugs of the azole group.
- Assess the contamination of tea by mycotoxins.
- Relate the results obtained with the origin (organic or conventional agriculture) and the type of tea packaging (bulk or tea bags).

Materials & Methods

Gathering Samples

Supermarkets	Herbalist Shops

Sample Treatment (4)

Extraction	Infusion
4,4g tea per 40ml of 0.9% NaCl with 0.05% Tween80 ™	2g per 100ml boiling water for 6 minutes

Fungal Burden
- MEA
- DG18

Azole Resistance
- Saboraud (control)
- Saboraud + Itraconazole 4 $mg.L^{-1}$
- Saboraud + Voriconazole 2 $mg.L^{-1}$
- Saboraud + Posaconazole 0,5 $mg.L^{-1}$

Mycotoxins

HPLC with MS-MS
- Aflatoxins
- Ochratoxin A

Colony Forming Units

Real-Time PCR
- *Aspergilus sections: Circumdati, Flavi, Fumigati, Versicolores*

Microscopy

Independent variables	Measured variables
Tea bags vs bulk Conventional vs biological origin	Fungal burden Toxigenic species Azole resistance Mycotoxins distribution

Expected Outcomes

- Detailed characterization of the contamination present in tea samples commercially accessible in Portugal, focusing on the distribution of fungal species azole and toxigenic resistant, as well as in the characterization of the mycotoxin profile.
- Risk assessment of tea consumption for human health.
- Propose measures to monitor and control fungal contamination (including resistant and toxigenic fungi) in commercially available tea.

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