

Characterization of the bioburden in green tea samples marketed in Lisbon

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Tea is one of the most consumed beverages in the world essentially because is beneficial effects on health. There are no regulations or load limits concerning microbial contamination of teas, and for this reason microbiological food safety hazards linked with this products have rarely been reported. The aim of this study was to assess the bioburden of loose and bags tea of green tea marketed in Lisbon, after and before boiling following the ISO 7218 (2007) and ISO 3103 (1980).

Twenty samples of green tea from loose and bag tea (ten of each) were select from different markets in Lisbon. For microbiological evaluation was carry out the extraction of the samples before and after the boiling. For samples that did not have manufacturer confection indications was followed ISO 7218_2007. The samples were inoculated on two media: dichloran-glycerol agar (DG18) and Rose Bengal Chloramphenicol (RBC) incubated for 5 days at 25°C. All tea samples will be screened for mycotoxins presence.

Regarding fungal contamination in tea bags, before boiling, ranged from 0 to 66.67 CFU.g⁻¹ in DG18, and from 0 to 84.85 CFU.g⁻¹ in RBC medium. In tea bags all brew samples present 0 CFU.mL⁻¹ for the two medium. For loose tea before boiling, the fungal contamination ranged from 0 to 96.97 CFU.g⁻¹, and after boiling ranged from 0 to 30.3 CFU.mL⁻¹ in DG18. In RBC, before boiling, the fungal concentration ranged from 0 to 72.73 CFU.g⁻¹ and the brew samples presented 0 CFU.mL⁻¹ or were below the limit of determination after boiling. In loose tea samples, before boiling, the DG18 media show five different fungal genera/species and the most prevalent were *Chrysosporium* sp. (38.46%), *Aspergillus* section *Nigri* (30.76%) and section *Versicolores* (11.5%), whereas in RBC media two different fungal species were found, *Aspergillus* section *Nigri* (80%) and *Penicillium* sp. (20%). After boiling only the DG18 presented fungal contamination: *Mucor* sp. (80%) and *Chrysonilia sitophila* (20%). Concerning tea bags samples, before boiling, *Aspergillus* section *Nigri* was the most prevalent fungi in both media (90.47% DG18; 90.62% RBC). None of the bag samples showed fungal contamination after boiling.

This study showed that after boiling was observed reduction of viable microorganisms, revealing that boiling is effective to reduce most bioburden present in the tea before boiling. However, due to the presence of toxigenic species in the tea before boiling and the well-known mycotoxins thermal resistance, mycotoxins data will be of interest to consider to a more accurate risk assessment.

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