

Title Effect of two different roasting techniques on the Ochratoxin A (OTA) reduction in coffee beans (*Coffea arabica*)

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Abstract

The roasting of green coffee beans (*Coffea arabica*) artificially contaminated by Ochratoxin A (OTA) after inoculation with *Aspergillus westerdijkiae* was carried out with two different roasting techniques (Rotating Cylinder [RC] and Fluidized Bed [FB]). The green coffee beans were contaminated at two different toxin levels ($L1 = 5.3 \mu\text{g kg}^{-1}$ and $L2 = 57.2 \mu\text{g kg}^{-1}$). Different roasting points (light, medium, dark and very dark) were set according to the L^* color coordinate. The cylinder roasting conditions were 0, 3, 6, 9, 12, and 15 min at 230 °C and the fluidized bed roasting conditions were 0, 0.9, 1.7, 2.6, 3.5 and 4.3 min, at 230 °C. The roasted beans were compared for their physical properties (bean swell and weight loss) as well as for their residual OTA content. The results indicated that the OTA reduction was similar for the two contamination levels: 95.1% and 97.2% with the rotating cylinder and 81.3% and 79.2% with the fluidized bed at the maximal roasting time. The OTA degradation kinetics differed between the two processes. The complete degradation of OTA within the limit of this study (230 °C) was not observed but the rotating cylinder roasting was the most efficient technical process for the OTA reduction in a commercial dark roasted coffee (88%).