

Title Non-thermal plasma disinfection of *Escherichia coli* on almond
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Abstract

This study was done to investigate the applicability of non-thermal plasma (NTP) technology for the disinfection of almond. Almonds were spiked by selected microorganisms with dipping in *E. coli* culture broth followed by drying. The spiked almonds were treated with NTP at various operating conditions for different duration of treatment. The sterilization pattern of the microorganisms was analyzed. NTP was very effective on disinfection of *E. coli* on almond, showing almost 5-log reduction after 30 s treatment at 30 kV and 2,000 Hz. The NTP disinfection effect against *E. coli* on almond increased with the voltage and the frequency. The NTP sterilization of *E. coli* followed the 1st order reaction kinetics, and the sterilization rate constants varied with almond types and grades. The *E. coli* cells at logarithmic phase were more sensitive to the NTP than those at stationary and declining phases.