

Inactivation of aerosolized pathogens detected in edible insects using filter-type plasma

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Edible insects are gaining attention worldwide as a promising food resource. However, there are concerns about microbiological safety, as insect pathogens and foodborne pathogens may become aerosolized during the insect rearing process and lead to transmission. This study aimed to evaluate the optimal conditions for inactivating aerosolized pathogens associated with edible insects using filter-type plasma. When plasma was discharged during the nebulization of the bacterial suspension, there was no significant reduction in the populations of *Bacillus thuringiensis*, *Serratia marcescens*, and *Escherichia coli* O157:H7 compared to the control. When plasma was discharged after nebulization, only *B. thuringiensis* showed a significant reduction of 1.20 Log CFU/cm². In contrast, when continuous plasma discharge was performed during and after the nebulization (combined discharge), the populations of these bacteria were significantly reduced to 1.24, 1.05, and 1.02 Log CFU/cm², respectively. The storage duration after plasma treatment did not significantly affect pathogen reduction. These results indicated that the disinfection effects of plasma on aerosolized pathogens associated with edible insects were confirmed, demonstrating its potential as an effective alternative for disinfecting insect rearing environments.

Key words : edible insects, insect rearing environments, aerosolized pathogenic bacteria, filter-type plasma