

## **Inactivation of *Listeria innocua* ATCC 33092 by Gas-Phase Plasma Treatment**

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**Abstract :** High voltage electrical discharge plasmas are new nonthermal developing techniques used for water decontamination. To the full understanding of cell inactivation mechanisms, this study brings inactivation, recovery and cellular leakage of *L. innocua* cells before and after the treatment. Bacterial solution (200 mL) of *L. innocua* was treated in a glass reactor with a point-to-plate electrode configuration (high voltage electrode-titanium wire, was in the gas phase and grounded electrode was in the liquid phase). Argon was injected into the headspace of the reactor at the gas flow of 5 L/min. Frequency of 60, 90 and 120 Hz, time of 5 and 10 min, positive polarity and conductivity of media of 100  $\mu$ S/cm were chosen to define listed parameters. With a longer treatment time inactivation was higher as well as the increase in cellular leakage. Despite total inactivation recovery of cells occurred probably because of a high leakage of proteins, compared to lower leakage of nucleic acids (DNA and RNA). In order to define mechanisms of inactivation further research is needed.

**Keywords :** *Listeria innocua* ATCC 33092, inactivation, gas phase plasma, cellular leakage, recovery of cells

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