

Enhancing Food Safety and Quality by using Cold Atmospheric Plasma

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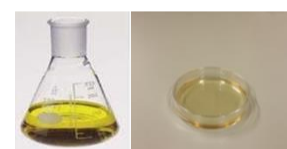
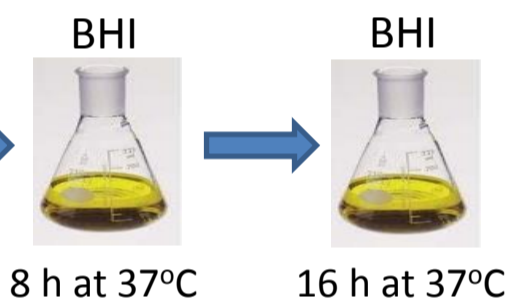
Introduction

The increasing consumer demand for safe and minimally processed foods and the shortcomings of traditional food preservation technologies, have encouraged the development, during the last few decades, of mild decontamination strategies to improve food safety and quality assurance systems. One of these emerging food preservation technologies is Cold Atmospheric Plasma (CAP). Plasma is ionized gas that consists of a large number of different species such as electrons, positive and negative ions, UV photons, free radicals, and gas atoms. It is considered to be the fourth state of matter and it has been demonstrated to be very effective against a wide range of microorganisms. In this research, CAP is used to inactivate *Listeria monocytogenes*, a foodborne pathogen with high fatality rate, and to assess the effect of cell prehistory on CAP efficacy.

Materials & Methods

Growth

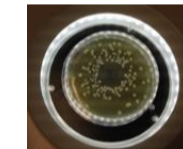
Stock culture of *Listeria monocytogenes* LMG 13305



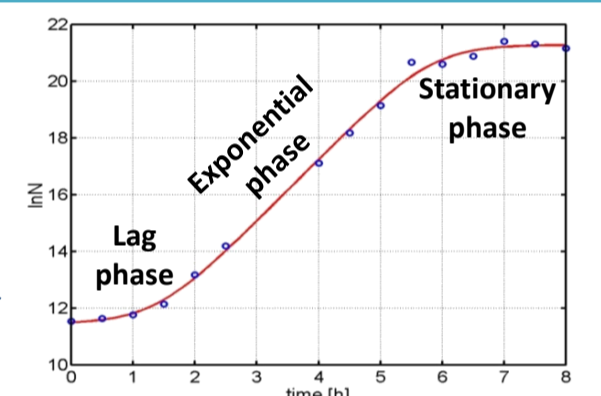
Dilution and Inoculation in/on growth media (adaption of environmental factors)



Incubation at 20°C

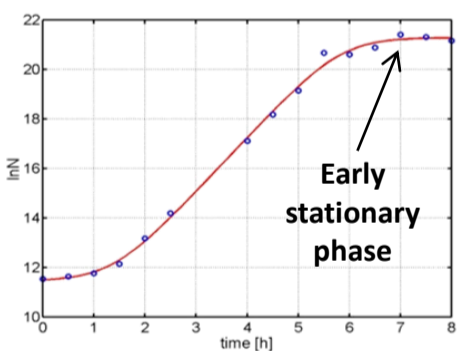


Determination of cell density by viable counts on BHIA plates



Estimation of growth parameters with the model of Baranyi and Roberts (1994)

Inactivation



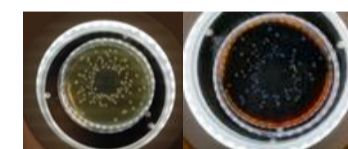
Growth until early stationary phase (at specific environmental conditions)



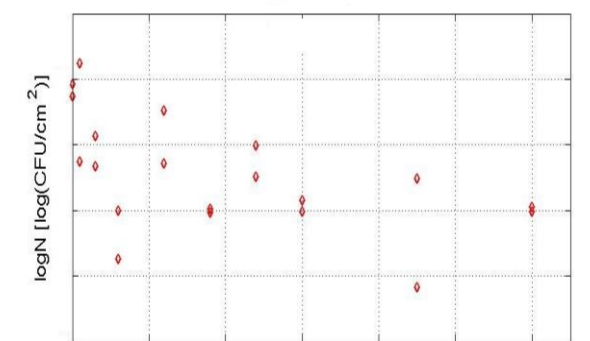
Dilution and Inoculation in/on inactivation support



CAP treatment

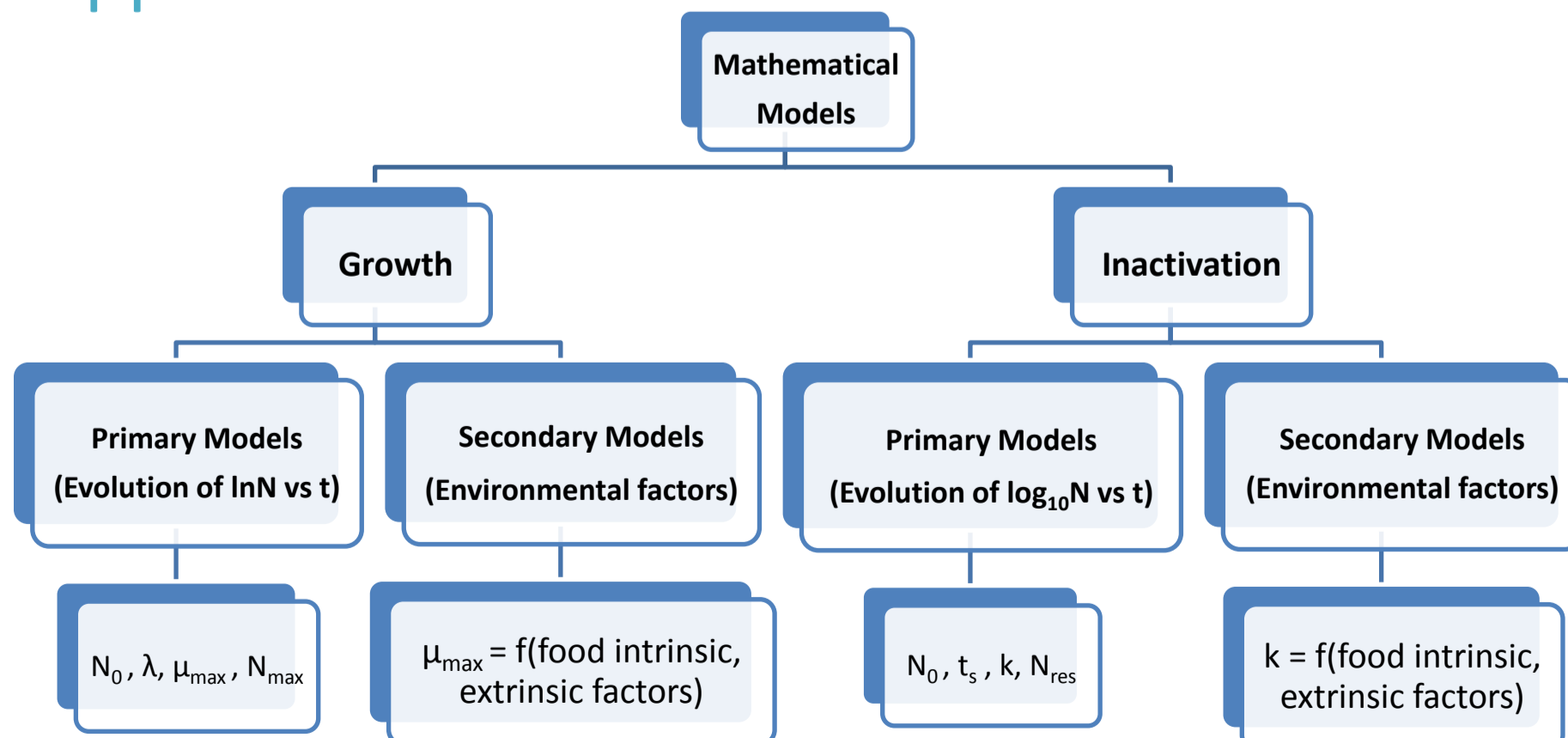


Determination of cell density by viable counts on BHIA and PALCAM plates



(Unpublished results)
Cell density plotted as a function of treatment duration

Quantitative Approaches



Acknowledgments

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