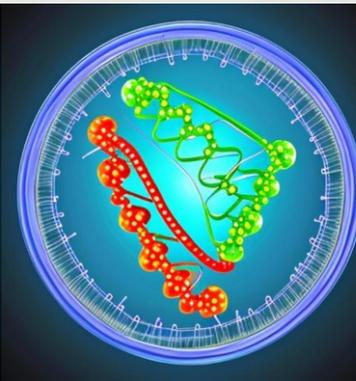




# FoodOmics 2024

**7<sup>th</sup> International Conference**



***2009-2024, fifteen years on from.  
Where are we now, what's next.***

**14-16 February, Cesena (Italy)**

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ABSTRACT BOOK

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## **Cold atmospheric plasma treatments for the decontamination of sliced carrots.**

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In recent years, the request for safer and more sustainable food decontamination methods has led to several alternatives including the use of natural antimicrobials or innovative physical treatments. Among the latter, cold atmospheric pressure plasma is a promising alternative to traditional chemical sanitizers in food safety. This study represents a step forward in our understanding of cold plasma's potential applications, specifically focusing on its effectiveness in reducing contamination by some pathogens on sliced carrots. In pursuit of this goal, challenge tests were set up by inoculating carrot slices with a cocktail of two strains of *Escherichia coli* (~5 Log CFU/ml). Subsequently, the contaminated carrot slices were exposed to various treatments: i) gaseous cold plasma under NO<sub>x</sub> or O<sub>3</sub> regimes; ii) washing with plasma activated water (PAW) in comparison to chlorinated water (100 ppm free chlorine). Specifically, treatments were carried out for 2, 5, 10, 20, and 30 minutes. Overall, PAW was poorly effective against *Escherichia coli* regardless the washing time, while the reference sanitizer resulted in approx. 2 Log reduction after a 2-min washing. However, no improvement was observed by prolonging washing up to 30 min. When direct cold atmospheric plasma treatments were performed, the NO<sub>x</sub> regime showed higher performances compared to the O<sub>3</sub> one, with average inactivation values of 1.5 Log CFU/g. While further trials are necessary to evaluate the effects on other target pathogens and quality features, overall data indicate that cold atmospheric

plasma can be a promising technology towards safer and more environmentally sustainable food decontamination procedures.

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