

SAFE-BAG - Novel continuous in-pack decontamination system for fresh produce

In 2008 a WHO report on microbial safety in fresh produce prioritised leafy green vegetables as the highest priority in terms of fresh produce safety from a global perspective. It is critical that effective decontamination steps are in place to ensure consumer protection and confidence in fresh produce. There is thus a requirement to ensure microbiological safety during production of minimally processed fresh foods in order to reduce contaminants and control cross contamination events to maintain microbiological quality and safety. There is a clear need to provide fresh cut fruit and vegetables packers with an affordable, safe and effective method of offering microbiological safety assurance, while at the same time increasing shelf life and retention of nutritional quality.

This project aims to develop a novel continuous in-pack decontamination system for fresh produce, by building on the results of past research that has been carried out by the Dublin Institute of Technology, whereby plasma technology has been effectively used for the in-pack decontamination of food products at laboratory scale. Plasma is widely used for industrial materials processing, and has recently shown promise as a decontamination tool, by injuring and inactivating pathogenic bacteria on inert food contact surfaces. A prototype in-pack decontamination system will be designed and built during the project, and its effectiveness for decontaminating fresh bagged lettuce, fruits and vegetables will be validated in industry. The system allows for short half-life radicals, such as singlet oxygen, to be generated within a sealed bag leading to microorganism inactivation, after which the confined gas returns to its original composition. The impact of the results hold benefits for consumer safety and confidence, extended shelf-life and increased demand for fresh produce, which will in turn impact on the competitiveness of fresh food processors.



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