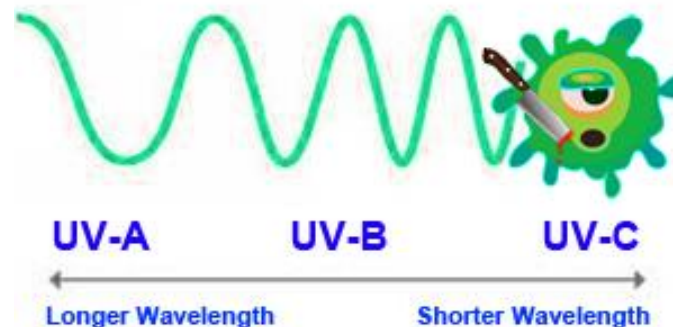


# **UV-C treatment of In-pack chicken breast**

# Principals and mechanisms

- Technology uses light to prevent microorganisms from growing
- Light is in the Band C part of the ultraviolet light spectrum (200-280 nm)
- Bacteria need direct exposure to the 254 nm light for inactivation
- UV-C light modifies microorganism DNA and prevents it from growing



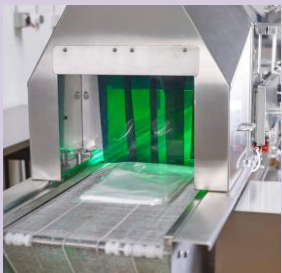
# Materials and Equipment



Skinless chicken breast



UV transmissible packaging (~65% transmission rate when vacuum shrink wrapped)



UV-C tunnel consisting of 16 x 95 W emitters

# Methodology



Chicken breasts inoculated with *Listeria monocytogenes*



Two separate trials carried out using two different inoculation methods, dip and spray inoculation



Breasts then vacuum shrink-wrapped and treated with various UV-C doses

# Results – Dip inoculated chicken breast

UV-C dose (mJ/cm <sup>2</sup> )	Average log reduction (log CFU/100 ml)
80	0.55 ± 0.27
120	0.48 ± 0.31
160	0.75 ± 0.26
200	0.49 ± 0.47

- Largest average reduction at 160 mJ/cm<sup>2</sup>
- Log reductions do not significantly increase from 80 mJ/cm<sup>2</sup>

# Results – Spray inoculated chicken breast

UV-C dose (mJ/cm <sup>2</sup> )	Average log reduction (log CFU/100 ml)
80	1.31 ± 0.35
160	1.04 ± 0.17
320	0.96 ± 0.33
640	0.97 ± 0.23

- Largest average reduction at 80 mJ/cm<sup>2</sup>
- No improvement in log reduction with increasing dose
- Improved reduction over dip inoculated

# Conclusions

- Inoculation test method impacts on the microbial reductions.
- Spray method representative of surface contamination of meat products post processing.
- Increasing the UV-C dose past 80 mJ/cm<sup>2</sup> does not significantly increase the microbial log reductions on chicken products.
- On average a 1.3 log reduction of *Listeria* is possible on skinless chicken breasts.

# Contacts



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