Decontamination of objects in a sealed container by means of atmospheric pressure plasmas - DTU Orbit (16/12/2018)

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The decontamination of objects (food) in a sealed container by means of atmospheric pressure plasmas is investigated. The target is Listeria monocytogenes, a bacterium which causes listeriosis and can be found in plants and food. The non-pathogenic species, Listeria innocua, is used for the experiments. Glass slides were inoculated with L. innocua. The slides were placed inside a low density polyethylene (LDPE) bag. The bag was filled with a gas mixture of 97.5 Vol% Ar and 2.5 Vol% O₂ and subsequently sealed. The bag was placed between the electrodes of a dielectric barrier discharge. The ambient atmosphere was air at atmospheric pressure. A plasma is generated inside the bag forming ozone from the oxygen. The maximum ozone concentration in the bag was found to be 140 ppm. A log 6 reduction of L. innocua is obtained after 15 min of exposure time. The temperature of the slides after treatment was below 30°C.

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