

International Conference on
NUTRITION & OBESITY PREVENTION

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International Conference on
GLOBAL MEDICINAL CHEMISTRY & GPCR SUMMIT

October 01-02, 2018

Las Vegas, USA

Evaluation of an advance oxidation system in controlling healthcare-associated infections on various surfaces

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The effectiveness of reactive oxygen species (ROS) generating airPHX equipment for reducing bacterial populations of *Clostridium difficile*, Methicillin Resistant *Staphylococcus aureus* (mRSA) and *Pseudomonas aeruginosa* on three (3) common contact surfaces; stainless steel (Austenitic 316), plastic (PVC) and linoleum (floor tile) were studied. Antimicrobial resistant pathogens pose an ongoing and increasing challenge to hospitals because they cause healthcare-associated infections (HAIs) during clinical treatment of patients. Coupons of stainless steel, plastic and linoleum were inoculated with each organism placed inside an experimental chamber were continuously treated with ROS for eight different hour increments from an airPHX advanced oxidation generator. ROS levels were continuously monitored prior

to removing coupons for microbiological testing. Control coupon were similarly placed in the chamber and held at environmental conditions to determine natural decay of microbial populations through time. Stainless steel coupon results after 0.5 h of ROS treatment *Clostridium difficile* Methicillin Resistant *Staphylococcus aureus* (mRSA) and *Pseudomonas aeruginosa* saw a 4.21-log, 4.42-log and 4.26-log destruction respectively. After 12 h exposure, these same organisms yielded a 6.87-log, 7.17-log and 7.71-log reduction, respectively. The other contact surfaces, plastic and linoleum displayed similar log reduction. These findings reveal that ROS treatment using the airPHX unit significantly reduces these three HAI's on common health care contact materials to > 4.2-log destruction after a 0.5 h exposure.

Biography

Rick Falkenberg received his PhD in Microbiology and Immunology from the University of California San Diego further identifying the correlation between hexose-monophosphate shunt, glycolytic system and fermentation-type in specific lactobacilli strains. He is recognized as a process authority and is well established with FDA, USDA FSIS and CODEX requirements, specifically high acid, low-acid, acidified foods, non-thermal applications as we low moisture foods. His group provides consulting and technical support to the processed food, spice, nut and nutraceutical industries in the areas of pasteurization and sterilization process validation, implementation of shelf stable food products, co-packer identification/evaluation and commercial production transfer.

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