

Antimicrobial Test Laboratories

Fast, Reliable Antimicrobial Efficacy Testing

Estimation of Microgen's D-125 for Control of Enterobacteriaceae bearing Resistance from the NDM-1 Gene

Written by Benjamin Tanner, Ph.D, 21 September, 2010

Author Background:

Benjamin Tanner is the president of Antimicrobial Test Laboratories, a commercial microbiology laboratory. He holds a Ph.D. in Microbiology and Immunology and has worked in the disinfectant industry for several years. He is the author of the book, "Legal Aspects of Infectious Diseases." Before launching Antimicrobial Test Laboratories, he worked as a microbiologist for the Clorox Company (Oakland, CA), developing disinfectants and other antimicrobial consumer products.

Purpose:

The purpose of this document is to describe the applicability of Microgen's DISNFX D-125™ product to control bacteria bearing the New Delhi Metallo-beta-Lactamase resistance gene, on environmental surfaces.

Introduction:

Microgen, Inc sells a disinfectant called DISNFX D-125™ which is a dilutable, quaternary ammonium disinfectant. Quaternary ammonium disinfectants have the advantage, in general, of robust activity against gram negative bacteria, such as Enterobacteriaceae (Examples include Klebsiella, Enterobacter, Salmonella, and *E. coli*). Recently, isolates of various species of Enterobacteriaceae have emerged in clinical settings bearing resistance to a class of antibiotics called carbapenems. This resistance has been shown to stem from acquisition of the New Delhi Metallo-Beta-lactamase (NDM-1) gene.¹ While these new and threatening isolates are much more resistant to antibiotics, there is nothing to suggest they also bear increased resistance to disinfectants such as DISNFX D-125™.

Evidence to Support Activity of D-125™ Specific to Enterobacteriaceae bearing the NDM-1 Carbapenem Resistance Gene:

- The quaternary ammonium formula in DISNFX D-125™ has been extensively tested and generally found to be very effective against a host of gram-negative, rod-shaped bacteria, even those with antibiotic resistance mechanisms.²
- CDC recommendations regarding the control of the spread of the NDM-1 resistance mechanism focus on patient quarantine, contact precautions, and surveillance, suggesting that CDC knows of no increased resistance to disinfectants brought about by acquisition of the NDM-1 gene.³

References:

1. Yong D, Toleman MA, Giske CG, et al. Characterization of a new metallo-β-lactamase gene, blaNDM-1, and a novel erythromycin esterase gene carried on a unique genetic structure in Klebsiella pneumoniae sequence type 14 from India. *Antimicrob Agents Chemother* 2009;53:5046--54.
2. Microgen D-125™ USEPA Master Label. May 17, 2007. Downloaded 4/15/08. (<http://www.microgeninc.com/milestones/PDF/D-125%20Master%20Label.pdf>)
3. CDC. Guidance for control of infections with carbapenem-resistant or carbapenemase-producing Enterobacteriaceae in acute care facilities. *MMWR* 2009;58:256--60.