Name(s)

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Project Number

S1517

Project Title

Methylglyoxal, Antibacterial Agent in Manuka Honey, and Its Efficacy in Treating S. aureus Related Nosocomial Infections

Abstract

Objectives

Measurement of efficacy of 40% concentrated methylglyoxal fabric treatment on the elimination of Staph. aureus-related nosocomial bacteria on healthcare personnel's apparels which is a pathway of transmission for hospital-acquired infections in a healthcare setting.

Methods

Obtained 40% concentrated methylglyoxal solution with H2O from Sigma-Aldrich (chemical institution). Apply solution evenly on 10 of 5cm X 5cm fabric pieces of scrub and leave in a hospital setting for 96 hours to be contaminated with nosocomial bacteria. Swab the bacteria from each piece of fabric into petri dishes and compare with bacteria counts from scrub pieces not treated with methylglyoxal solution. Go on to test different variations of concentration and antimicrobial fabrics.

Results

Average percentage of bacteria eliminated on scrub treated with methylglyoxal in trail one was 21.08% and 21.26% in Trial two. The results reflect that methylglyoxal isolated as the active ingredient in Manuka honey, achieves a consistent amount of reduction of Staph. aureus-related nosocomial bacteria on fabric by eliminating an estimate of ? of the bacteria swabbed from hospital scrubs. New results on different variations of concentration and antimicrobial fabrics are still being updated.

Conclusions

A fabric treatment made up of methylglyoxal, the active ingredient in Manuka Honey, was isolated to study its traits in suppressing the expression of bacterial surface proteins binding to apparels. It would limit biofilm production and prevent Staph.-related nosocomial infections from occurring at all. Methylglyoxal avoids the problem of dealing with antibiotic resistance by utilizing a natural remedy normally used to cure skin deformities and pave a step closer in limiting the spread of nosocomial diseases if the vessel containing the bacteria, contaminated clothing, would be abolished or reduced. Creating a methylglyoxal spray or hygienic room (further research) provide a more efficient and faster solution to counter the increasing risk of HAI transmission and infection around the world.

Summary Statement

Creating hygienic fabric treatments with methylglyoxal solution to eliminate transmission of Staph. aureus-related nosocomial infections through ways of physcial communication and air ventilation in hospital settings.

Help Received

Help recieved from Dr. Rachell Auld in facilitated labs and borrowed equipments of Eleanor Roosevelt High School