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بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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Microbiological Studies on Nosocomial Infections and its Control

A THESIS

Submitted in Partial Fulfillment of the requirement of the degree of

Master of Science in Microbiology

By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

صدق الله العظيم

(سورة طه آية ١١٤)

Declaration

I declare that the thesis titled “Microbiological Studies on Nosocomial Infections and its Control” is my own work and has not previously been submitted to any other university. The references were being checked whenever possible; show the extent to which I have availed myself of the work of other authors.

Hagar Mohamed Abdelrahman

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Abstract

Abstract

Nosocomial infections (hospital-acquired infections) are considered a major public health challenge. They cause severe financial problems and sometimes deaths in hospital settings especially in developing countries. A total of 350 samples were collected from different sites located in three governmental hospitals in Cairo. Handwashing sink was the most contaminated site followed by computer keyboards and ultrasonic machines. According to viteck, bacterial isolates were identified as *Acnietobacter baumanii, Bacillus cereus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonia, Pseudomonas auerignosa, Staphylococcus aureus and Staphylococcus saprophyticus.* Fungal isolates were identified by macro and micro morphological characteristics as *Aspergillus flavus, Aspergillus fumigatus, Aspergillus niger, Aspergillus terrus, Cladosporium herbarum, Fusarium dimerum, Fusarium nivale, Fusarium oxysporum, Fusarium proliferatum, Penicillium carneum, Penicillium flavigenum, Penicillium melanoconidium, Penicillium sclerotigenum, Penicillium viridiactum* and *Rhizopus stolonifer.*

Staphylococcus aureus and Klebsiella pneumonia were the most common isolated bacteria while *Aspergillus niger* was the most common fungus isolated from all studied sites. Synthetic

Antimicrobial agents are widely used to fight microbial infections with some limitations and toxicity, consequently, many researches focused on new antimicrobial substances from natural plants sources. Antimicrobial activity of both natural (*Eucalyptus* leaves extract and Garlic extract), synthetic antimicrobial agents (Chloramphenicol, Amoxicillin and Amphotericin B) and their mixtures were tested against pathogenic microbial species using agar well diffusion method.

Bacillus cereus was the most sensitive bacterial species to garlic extract while *Staphylococcus aureus* and *Bacillus cereus* were the most sensitive bacterial species to *Eucalyptus* leaves extract. Obviously, mixtures of synthetic and natural antibacterial agents showed synergetic effect whereas an antagonistic effect was observed with mixtures of both natural extracts against bacterial pathogens. On the contrary, both natural extracts possess very weak activity against isolated fungal pathogens, in addition the mixtures of natural and synthetic antifungal agents showed antagonistic activity.

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