

Ilia State University

Faculty of Natural Sciences and Medicine

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Thesis Title:

**Effect of Some Actinomycetes Metabolites on Some Resistant Pathogenic Bacterial Isolates
from Some Hospitals Operating Rooms**

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1. Abstract

The discovery of antibiotics is considered to be the greatest achievement of modern medicine. Resistant pathogens continue to be spread, but the speed at which resistance is developing has been halted. In addition to good implementation of such antibiotic stewardship programs for patients scheduled for the operating room, the soil habitat was one of the well-known sources containing valuable bioactive compounds against drug-resistant pathogens. Actinobacteria are a remarkably diverse phylum of bacteria with an amazing source of metabolic versatility. They manufacture the majority of clinically used antibiotics as well as a plethora of other natural products with medical or agricultural applications. The isolates were tested for antibiotic activity against *Escherichia coli*, *Staphylococcus aureus*, *Enterobacter*, *Klebsiella*, *Clostridium*, and *Pseudomonas aeruginosa*.

In this study, eighty soil samples were collected and screened for the presence of Actinomycetes, and the record of the isolation of strains coded as A1, A2, A3, and A4 on starch-casein agar media.

These isolates (A1,A2,A3,A4) showed the same powerful antibacterial activity both gram-positive and gram-negative bacteria, against (there is similarity in effect) including (*Escherichia coli*, *Staphylococcus aureus*, *Enterobacter*, *Klebsiella*, *Clostridium*, and *Pseudomonas aeruginosa*).

After examine several concentration of Actinomycetes metabolites , Actinomycetes metabolite sample 1 with concentration of 24 µg/mL or 3 ml possesses the highest antibacterial action against the resistant pathogenic isolates as it having the highest inhibition zones observed in the well diffusion

Antimicrobial compounds such as aromadendrene, 4H-1-benzopyran-4-one, oleic acid, and others with additional antitumor, antioxidant, anti-inflammatory, and antifungal properties have been discovered. Further studies exploring the antimicrobial potential of these isolates from various unexplored areas need to be done, which will be more effective than the old antibiotics used.

This study consider as novel finding of the antimicrobial potential of these isolates , which will be more effective than the old antibiotics used.