ET AL TOLERANCE AND ANTIBIOTIC RESISTANCE PATTERNS OF BACTERIA ISOLATED FROM SELECTED RIVERS OF CAVITE

THESIS

JOANNE AGUSTIN

College of Arts and Sciences
CAVITE STATE UNIVERSITY
Indang, Cavite

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METAL TOLERANCE AND ANTIBIOTIC RESISTANCE PATTERNS OF BACTERIA ISOLATED FROM SELECTED RIVERS OF CAVITE

Undergraduate Thesis
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JOANNE AGUSTIN

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ABSTRACT

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One hundred and one bacterial isolates from selected rivers of Cavite were subjected to different antibiotics and metals with varying concentrations. Isolates exhibited growth decline as the concentration of heavy metals increases. They also showed highest resistance to Lead (800ppm). Majority of the isolates exhibited tri-tolerance and bi-tolerance or tolerance to three and two kinds of metals, respectively. Iron-Lead-Zinc tolerance is the most observed tri-tolerance pattern.

Bacteria are most resistant to Ampicillin-supplemented medium. Bi- and tri-resistance were the most common patterns of antibiotic resistance exhibited by the isolates. Ampicillin-Kanamycin-Clindamycin and Ampicillin-Oxytetracycline resistance patterns are the most observed tri-resistance and bi-resistance patterns, respectively.

Clindamycin-Lead and Erythromycin-Lead resistance have the highest percentage of Antibiotic Resistance and Metal Tolerance (%AMR). This implies that lead tolerant bacteria have also developed resistance to clindamycin and erythromycin.

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METAL TOLERANCE AND ANTIBIOTIC RESISTANCE PATTERNS OF BACTERIA ISOLATED FROM RIVERS OF CAVITE

JOANNE AGUSTIN

An undergraduate thesis submitted to the faculty of the Department of Biological Sciences, College of Arts and Sciences, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for the degree of Bachelor of Science in Biology, with contribution no. _____. Prepared under the supervision of Dr. Yolanda Ilagan.

INTRODUCTION

Rivers have played an important part in the community since the start of civilization. However, community factors, such as overcrowding, inadequate sanitation, indiscriminate waste disposal, and even some agricultural practices have contributed to the deterioration of rivers.

One of the leading causes of river pollution is the presence of the heavy metals , which are extremely toxic and create conditions that promote resistance build up on microorganisms. Among these organisms, bacteria are of particular concern because they are widespread and possess the ability to adapt readily through mutation and selection. Bacterial tolerance patterns can be used to indicate whether certain metals and other contaminants are present or have been present in a particular environment.

Another implication of heavy metal tolerance in the environment is that it may contribute to the maintenance of antibiotic resistance genes. Resistance genes to antibiotics and heavy metals may be located closely together on the same plasmid in