



**ANTIMICROBIAL SENSITIVITY OF CRUDE SEA URCHIN TOXIN  
EXTRACT (*DIADEMA SETOSUM*) AGAINST *STAPHYLOCOCCUS  
AUREUS* AND *PSEUDOMONAS AERUGINOSA***



An Undergraduate Research Presented to the  
Faculty of the Biological Sciences Department  
College of Science  
De La Salle University - Dasmariñas  
Dasmariñas, Cavite

In Partial Fulfilment of the Requirements  
For the Degree Bachelor of Science Major in Human Biology

**MA. DIANNE KRISTINE ALARCA**

**JOSEPH BAUTISTA**

**MARCH 2011**



### ABSTRACT

This study aimed to determine the antimicrobial activity of *Diadema setosum* crude toxin extract on *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The spines were collected and extracted using an ethanol solvent. Three replicates were made per test organism. The Kirby Bauer method was used in testing the antimicrobial sensitivity of the crude extract to the selected microorganisms. Six mm filter paper disks were soaked with the crude extract and placed onto the seeded plate. After 24 hr the results were observed and the mean average zone of inhibition was measured in mm. The results yielded 0mm and 0mm respectively. The results were compared to the standard sensitivity index of streptomycin in determining the test microorganism sensitivity to the crude extract. The extract showed no antimicrobial effect on *Pseudomonas aeruginosa* and *Stapylococcus aureus*.



## TABLE OF CONTENTS

Title Page	1
Approval Sheet	2
Acknowledgments	3
Abstract	4
Table of Contents	5
CHAPTER 1 INTRODUCTION	
1.1 Background of the Study	9
1.2 Conceptual (or Theoretical) Framework	10
1.3 Statement of the Problem	10
1.4 Scope and Limitations	11
1.5 Significance of the Study	11
1.6 Definition of Terms	12
CHAPTER 2 LITERATURE REVIEW	
2.1 Conceptual Literature	14
2.2 Related Studies	22
CHAPTER 3 METHODOLOGY	
3.1 Research Design	24
3.2 Research Setting (or Instruments)	24
3.3 Research Procedure	25
3.4 Data Gathering and Statistical Analysis	28



CHAPTER 4 RESULTS AND DISCUSSION

4.1 Results 29

4.2 Discussion 30

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions 33

5.2 Recommendations 33

Cited References 35

Appendices

A. Standard Procedure 41

B. Raw Data 43

C. Standard Sensitivity Index 44

D. Budgetary Requirements 45

E. Timetable of Requirements 46

F. Photo Documentation 47

Curriculum Vitae 55



## LIST OF TABLES

4.1 Mean zone of inhibition formed in (mm) by crude extract

*Diadema setosum* and Streptomycin against selected  
microorganism.

30





### LIST OF FIGURES

- 4.1 Antimicrobial Assay result of *Diadema setosum* crude toxin  
extra against *Staphylococcus aureus* in comparison with  
streptomycin 31
- 4.2 Antimicrobial Assay result of *Diadema setosum* crude toxin  
extra against *Pseudomonas aeruginosa* in comparison with  
streptomycin 31

