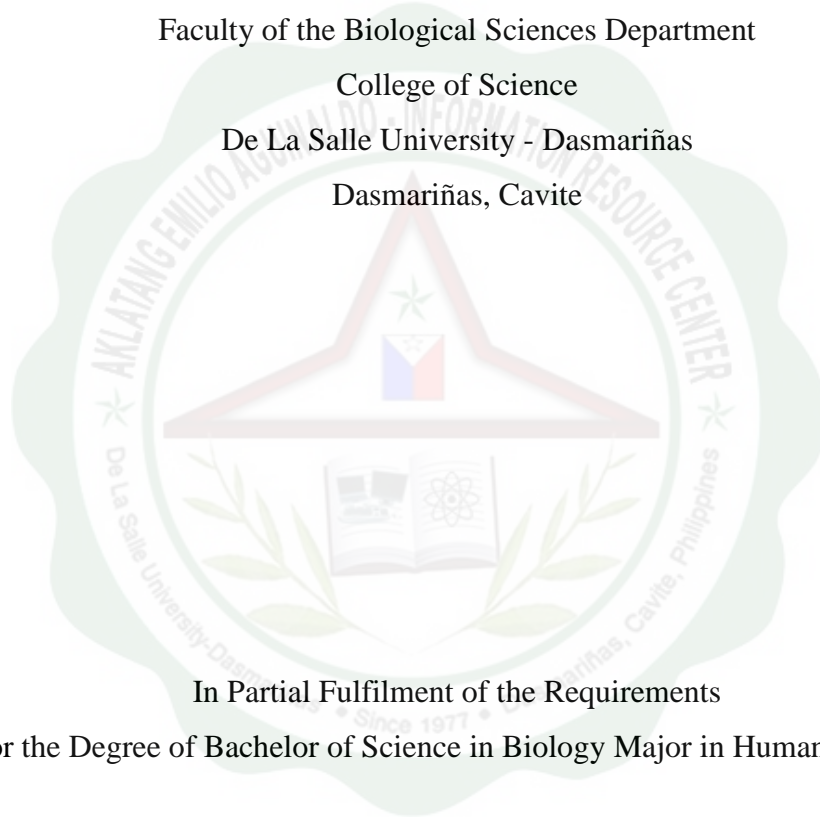




**INFECTIVITY POTENTIAL OF INDUCED VIABLE BUT NONCULTURABLE
OVERT PATHOGENIC ENTEROBACTERS**

An Undergraduate Research Paper 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 of Bachelor of Science in Biology Major in Human Biology

MARIELLE A. MAGPANTAY
NICOLE MARIE D. SEMBRANO

February 2012



ABSTRACT

The occurrence of waterborne diseases is increasing throughout the Philippines particularly in Cavite province. Enteric bacteria are responsible for food poisoning and high rate of diarrhea cases. Some of the enteric bacteria enter viable but nonculturable state (VBNC) which can be a public health problem. The study investigated the infectivity potential of induced viable but nonculturable overt pathogenic enterobacters, *Escherichia coli*, *Salmonella* sp. and *Shigella* sp. Enteric bacteria were isolated from the ground water of Malagasang, Anabu Kostal, Imus-Cavite. Identification of the isolates was done by streak plate method using Eosin Methylene Blue Agar and Salmonella Shigella Agar and confirmed by API-20E kit. The identified isolated enteric bacteria were subjected to induction of viable but nonculturable state through nutrient deprivation and or heat stress. The results showed that among the 9 water samples, 7 were positive to *E.coli*, 5 for *Salmonella* sp. and 2 for *Shigella* sp. The isolated *Escherichia coli* and *Salmonella* sp. upon subjection to nutrient deprivation and or heat stress were able to enter VBNC state for 15 days. However, the infectivity potential of the induced VBNC bacteria was not observed in animal model (albino mice). No observable symptoms relating to diarrhea were observed such as watery and bloody diarrhea for 2 days. No immediate deaths were recorded. With these results, it can be concluded that the ground water samples of poor quality and the isolated *Escherichia coli* and *Salmonella* sp. that entered VBNC were not infective. The results indicate a need for the province of Cavite to take proper measure in safeguarding public health.



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	7
1.2 Conceptual Framework	9
1.3 Statement of the Problem	10
1.4 Scope and Limitations	10
1.5 Significance of the Study	11
1.6 Definition of Terms	12
CHAPTER 2 LITERATURE REVIEW	
2.1 Conceptual Literature	13
2.2 Related Studies	20
CHAPTER 3 METHODOLOGY	
3.1 Research Design	24
3.2 Research Setting	24
3.3 Research Procedure	25
3.4 Data Gathering	27



CHAPTER 4 RESULTS AND DISCUSSION

4.1 Results 28

4.2 Discussion 33

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion 44

5.2 Recommendation 45

Cited References 46

Appendices

A. Map of Study Site 50

B. Raw Data 51

C. Budget Allocation 52

D. Gantt Chart 53

E. Photo Documentation 54

E. Curriculum Vitae of Marielle A. Magpantay 59

Curriculum Vitae of Nicole Marie D. Sembrano 60