

**The Use of Garlic Extract as an Antimicrobial Agent in Indian
Mackerel (*Rastrelliger kanagurta*) Preservation**

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, not material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Fish is a biological matter which undergoes quick deterioration due to spoilage process which is mainly caused by spoilage bacteria. Garlic extract (*Allium sativum*) that possesses antimicrobial properties may hinder the growth of spoilage bacteria so the fish freshness can be maintained. The purpose of this research is to study the effectiveness of garlic extract as an antimicrobial agent in fish preservation by inhibiting the growth of spoilage bacteria in fish. The design of the experiment was balance-Completely Single Randomized Design with 4 treatments and 3 replications. The given treatments included soaking of Indian mackerels (*Rastrelliger kanagurta*) in 2%, 4% and 6% garlic extract, and also control (without soaking) for 15 minutes. The experiment results showed that the use of garlic extract inhibited the growth of either spoilage bacteria or histamine-forming bacteria in Indian mackerels. The soaking of Indian mackerels in all those concentrations of garlic extract was able to prolong Indian mackerel shelf life approximately up to 6 hours at room temperature. The antimicrobial activity increased with increasing garlic extract concentration. Besides, the soaking in garlic extract improved the organoleptic characteristics of Indian mackerel. In contrast, the effect of garlic extract was not clearly detected in the water content and TVB level of Indian mackerels. However, garlic extract has the potential to be used as a natural preservative to maintain fish freshness during storage at room temperature.

DEDICATION

I dedicate this thesis to

- Jesus Christ as the basis for my life
- my parents as my motivators and inspirations
- myself as the author



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TABLE OF CONTENTS

STATEMENT BY THE AUTHOR.....	2
ABSTRACT.....	3
DEDICATION.....	4
ACKNOWLEDGMENTS.....	5
CHAPTER 1 – INTRODUCTION.....	11
CHAPTER 2 – LITERATURE REVIEW.....	16
CHAPTER 3 – METHODOLOGY.....	46
CHAPTER 4 – RESULT & DISCUSSION.....	56
CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS.....	89
GLOSSARY.....	91
REFERENCES.....	92
APPENDICES.....	97
CURRICULUM VITAE.....	135

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