

UNIVERSITI TEKNOLOGI MARA

**ISOLATION OF ENDOPHYTIC
ACTINOMYCETES FROM *Psidium
guajava* AND *Ziziphus mauritiana***

NURUL NAJWA BINTI SALEH

Thesis submitted in fulfillment of the requirements for the
degree of
Bachelor of Medical Laboratory Technology (Hons)

Faculty of Health Sciences

July 2019

DECLARATION BY STUDENT

Project entitled “Isolation of Endophytic Actinomycetes from *Psidium guajava* And *Ziziphus mauritiana*” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisors, Madam Hartini Yusof and Dr Nurul 'Izzah Mohd Sarmin. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Medical Laboratory Technology (Hons).

Student’s signature:

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(Nurul Najwa Binti Saleh)

2016409376

951205-10-5724

Date:

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious, The Most Merciful

Alhamdulillah, and I am very grateful to Allah S.W.T for giving me strength, ability and health to complete my final year project in a mean time.

Firstly, I would like to appreciate and thank you to my project supervisors, Madam Hartini Yusof and Dr Nurul ‘Izzah Mohd Sarmin for every continuous teaching and giving me more knowledge regarding my final year project. Her encouragements, guidance and suggestion that he gave to me were helpful in completing my final year project successfully.

My sincere thanks and appreciation goes to all the staff from the department and laboratory who gave their full cooperation and assisted me in many ways throughout my study. A special thanks to my friends from HS241 who always give me support and motivation while completing my study. May our friendship lasts forever.

A special appreciation to my parents Mr. Saleh Ismail and Mrs. Masyitah Hasim and beloved family for their unstoppable moral support and encouragement from early project until I reach my objective of study and successfully accomplish this study. Lastly, my gratitude and sincere thanks to all those who have been not intentionally left out for their assistance and cooperation throughout the study, without them it would be impossible to complete this thesis.

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ABSTRACT

Endophytic microorganisms are usually bacteria, fungi or actinomycetes that inhabit the internal part of plants without causing apparent symptoms of a disease to the plants. Actinomycetes have been used for drug discovery because it produces more than 10, 000 bioactive compounds. Endophytic actinomycetes possess metabolites with a broad-spectrum activity where it can be used to treat multidrug-resistant pathogens, such as Methicillin resistant *Staphylococcus aureus* (MRSA) whereby ethnomedicinal plants is an essential resource of isolating these endophytic actinomycetes. Therefore, the present study was designed to correlate the presence of endophytic actinomycetes in ethnomedicinal plants by isolating them from *Psidium guajava* and *Ziziphus mauritiana*. The efficacy of two surface sterilization methods and two different incubation temperatures for isolation of endophytic actinomycetes were assessed by using low based media. Two procedures were used for surface sterilization, Procedure I using 70% ethanol and Procedure II using 99% ethanol and the isolation plate was then incubated at 30°C and 37°C for one month. The method using 99% ethanol (Procedure II) in surface sterilization procedure was observed more effective in eliminating the epiphytes and incubation at 37°C was found to be practical for the isolation of endophytic actinomycetes. Based on morphological characteristics, all seven isolates were identified with *Streptomyces* spp and were isolated from roots of plants. From the seven isolated, 71.4% (n=5) were isolated from *Z. mauritiana* and 28.6% (n=2) from *P. guajava*. In conclusion, the isolation and optimization to enhance the growth of endophytes through surface sterilization and incubation temperature was described and it shows that the endophytic actinomycetes can potentially be harvested from ethnomedicinal plants.

Keywords: *Endophytic actinomycetes, ethnomedicinal plant, surface sterilization, incubation temperature.*