

This Final Year Project Report entitled "Secondary Metabolites and Antioxidant properties of Selected Mangrove Isolates of Actinomycetes" was submitted by Rojilin binti Donol, in partial fulfillment of requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

**SECONDARY METABOLITES AND ANTIOXIDANT PROPERTIES OF
SELECTED MANGROVE ISOLATES OF ACTINOMYCETES**



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ABSTRACT

SECONDARY METABOLITES AND ANTIOXIDANT PROPERTIES OF SELECTED MANGROVE ISOLATES OF ACTINOMYCETES

This study reports the successful isolation and bioactivity of mangrove actinomycetes. Four selected actinomycetes were isolated from soil samples collected from Binsulok, Beaufort. Four selected isolates of actinomycetes were assessed for presence of secondary metabolites and antioxidant properties. All isolates were fermented for 10 days at room temperature (28 °C) in Muller Hinton broth (MHA) with 7 ± 0.5 at 28 °C for detection of organic compound and the level of antioxidant potential by DPPH scavenging activity. The screening method detects for secondary metabolite which were saponin, flavonoids, alkaloids and tannin. The antioxidant activity was determined by DPPH scavenging activity. The data from DPPH assay showed that four selected isolates have antioxidant properties, which were, R-1 (85.13%), R-2 (90.28%), R-3 (76.74%) and R-4 (77.62%). The selected isolate of mangrove's actinomycetes (R-2) which was 90.28% showed the highest of antioxidant activity but the R-3 and R-4 had the strongest antioxidant activity. The ability of actinomycetes produced bioactive compound depends to environment state. Further study on these selected isolated actinomycetes should be done more in term of identification and confirmation of actinomycetes species, determination of active compound and different concentration of bacteria extract.

INTRODUCTION

1.0 Background of study

The actinomycete is a 'ray fungi' and has been explained through the generic name of actinomycetes previously. Initially, there was confusion about actinomycetes either they were bacteria, fungi or other special group. This is because of the resemblance in constituent form of bacteria and the way of growth has similarity to fungus (Waksman, 1939). However, nowadays the actinomycetes, are classified as a bacteria which known as facultative anaerobic and gram positive bacteria. Besides that, the actinomycetes are also include in a group of subdivision unicellular (prokaryote) microorganism which are consist of the unique of their spore forming abilities and mycelia structure formation (Sivakumar, 2001; Lo *et al.*, 2002; Agadaba, 2014).

Most of the actinomycetes have been found abundant in soil. This is because soil contain diverse of microorganism which include the bacteria that growth easily in any natural condition (Gowsalya *et al.*, 2014). Therefore, the opportunity to explore actinomycetes is huge. Previous studies have found