

**UNIVERSITI TEKNOLOGI MARA**

**ISOLATION OF ACTINOMYCETES OF  
RUBIACEAE PLANTS FROM UiTM PUNCAK  
ALAM BIOLOGICAL RESERVE**

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## **Abstract**

Isolation of actinomycetes from the terrestrial environment has been widely investigated. Choosing a unique sources or an under investigating plants species may increase the chances of finding actinomycetes. The isolation of endophytic actinomycetes from surface-sterilized tissue of four plants species from Rubiaceae family labelled as TH1, TH2, TH3 and TH4 was made using three types of non-selective medium i.e potato-dextrose agar, nutrient agar and 25% of agar in water and six types of selective medium for *Streptomyces* i.e ISP 1, ISP 2, ISP3, ISP4, ISP5, and ISP 7. Out of 5 isolates discovered, 1 was from leaves, 2 were from stem and 2 were from roots. A microscopic examination of these five isolates was done by using light microscope revealed that they own certain morphological characteristics of an actinomycetes. Two out of five crude extract of isolates were further analysed by HPLC profiling analysis and the chromatogram of TH4.A sample from root showed that two peaks at retention time of 22.833 and 24.437 were significantly different from the standard chromatogram.

# **Chapter 1**

## **Introduction**

### **1.1 Background of Study**

Realizing the capability of microorganisms to produce diverse bioactive molecules and the existence of unexplored microbial diversity, researchers are started to isolate and screen microbes of diverse habitat and unique environment for discovery of novel metabolites. One such mostly contributed and mostly studied microorganism is the endophytes, which are defined as those microbes that colonize healthy tissues of plants, at least for a part of their life cycle, without causing apparent disease symptoms in their host (Mei & Flinn, 2010; G. A. Strobel, 2003). Different works carried out so far regarding the role of endophytes in host plants indicate that they can stimulate plant growth, increase disease resistance, improve plant's ability to withstand environmental stresses and recycle nutrient (Sturz, Christie, & Nowak, 2000). Besides these, endophytes are also recognized as rich sources of bioactive metabolites of multifold importance (G. Strobel & Daisy, 2003; Tan & Zou, 2001) . In developing countries, the indigenous communities have been used medicinal plants in different ways for the treatment of various diseases, which in turn has resulted in scientific discoveries, with a wealth of literature on plant extracts and their biological activities. Endophytic fungi or