

UNIVERSITI TEKNOLOGI MARA

MICROBIAL BIOTRANSFORMATION  
OF BRYONOLIC ACID

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## ABSTRACT

Microbial transformation usage was very crucial long time ago. The scientists found that this method have more advantages compare to chemical synthesis method. The criteria of microbial itself such as regio- and stereoselective allow compound modification to occur and time consuming for the reaction can be less. By having specific microbes, it can help transformation of the compound of interest at specific time. In this study, bryonolic acid is UV inactive compound has been used as substrate and undergone fermentation with several endophytes. The extraction of all samples were analyzed using TLC and HPLC. The suitable ratio for TLC was 60% hexane and 40% ethyl acetate while for HPLC that equipped with ELSD detector was used since bryonolic acid is UV inactive. Only three samples were selected to do HPLC profiling in which *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Trichothecium roseum*. The HPLC profiles were compared and *Pseudomonas aeruginosa* showed significant result in both TLC and HPLC.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the study

The development of new drugs now days become rapid in pharmaceutical field in order to treat new disease. This development can be done using either chemical synthesis or microbial synthesis. The favor of microbial synthesis or also known as microbial biotransformation become increase compare to the chemical synthesis due to some beneficial factor such as the use of microorganism is very green and inexpensive. Besides, the ability of microorganism to attack at specific site of the compound of interest which can attack at inactive carbon compare to chemical synthesis which unable to attack at inactive carbon. This is due to the properties of microorganism which has regio- and streoselectivity (Pimentel, Molina, Dionísio, Maróstica Junior, & Pastore, 2011).

The biotransformation of triterpenoids that have been reported were numerous such as betulinic acid, glycyrrhetic acid, ursolic acid and oleanolic acid. Betulinic acid have two biotransformed product which is alcohol and glucose and only alcohol has biological activity against melanoma cell line. For glycyrrhetic acid, only methyl esters obtained