UNIVERSITI TEKNOLOGI MARA

MICROBIAL TRANSFORMATION OF GLYCYRRHIZIC ACID AND IDENTIFICATION OF THEIR SECONDARY METABOLITES THROUGH LCMS AND NMR

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ABSTRACT

The main objective of our study is to be able to observe the process of microbial transformation on biologically active compound, glycyrrhizic acid, and to identify the secondary metabolites generated when glycyrrhizic acid is subjected to microbial transformation by using HPLC and NMR. In achieving the objectives of our study, there are two particular steps involve which were primary screening of secondary metabolites and large scale production of secondary metabolites. Primary screening was done in order to check which fungi transform the most potential and abundant secondary metabolites from glycyrrhizic acid. After the first step was performed, *Trichothecium roseum* was chosen as the fungi of interest for the large scale production and we was able to identify few secondary metabolites generated from *Trichothecium roseum* from HPLC chromatogram observed. Our research however was limited to HPLC identification. Structural elucidation by NMR cannot be done because of time limitation.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Previously chemical transformation by using chemical catalyst is used to transform a metabolite into another reactive metabolite or to transform a compound which has dormant pharmacological activity into a more reactive species but this process is not favoured because of the toxicity it may imposed and low-yield, therefore another approach is used which is biotransformation.

1.1.1 What is microbial transformation?

Biotransformation is "A series of chemical reactions that occur in a compound as a result of enzymatic or metabolic activities by a living organism". For biotransformation, various biological catalyst or microbes can be used. The transformation in which microbes are used for chemical modification of compound is called microbial transformation. There are two types of microbial transformation which are xenobiotic transformation and biogenetically-directed transformation (Zafar Ali Siddiqui, 2007). Xenobiotic transformation is transformation in which the structure of the substrate is completely alien to the organisms, whereas biogenetically-directed transformation is transformation in which the substrate has structural relationship which the intermediate compound produces by the organisms. The microorganism will produce enzyme in which this enzyme is the one that is responsible to biotransform the product.