UNIVERSITI TEKNOLOGI MARA MALAYSIA

# MICROBIAL BIOTRANSFORMATION OF ESTRIOL BY THE FILAMENTOUS FUNGI

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# ABSTRACT

The main focus of our research was to observe the biological transformation of steroidal compounds using filamentous fungi. The steroidal compound estriol was inoculated into filamentous fungal *Trichothecium Roseum* cultures. In order to achieve the objective, the large scale production of secondary metabolites has been used to identify any potential and abundant metabolites of estriol. Time course study of fermentation of estriol with filamentous fungus was carried out. The transformed products of estriol have been investigated through TLC and HPLC method. We have found that the *Trichothecium Roseum* produced maximum amount of secondary metabolite after 9 days of incubation with estriol. After analysis of metabolite profiling by TLC and HPLC, there are few possible secondary metabolite of fungi discovered. Due to the time limitation, the separation and characterization of metabolites have not been performed.

# CHAPTER 1

# INTRODUCTION

## 1.1 Background of Study

Microbial transformation is an important approach and a unique tool in the field of biocatalysis using bacteria, fungi and algae. Biocatalysis is a process that using natural catalysts such as enzymes that isolated or still resides inside living cells to perform chemical transformation to organic compounds. Studies on fermentation of microorganism or microbial synthesis have long conducted for the production of useful compounds that could also be obtained using chemical methods. The most important role of microbial transformation is to generate active, less toxic pharmaceutical ingredients and key intermediates. This technique is increasingly important in order to produce new drugs that more beneficial to the patient and also the society.

Microbes have been used for a long time to produce many types of chemical products. In ancient time, vinegar was made by filtering alcohol through wood pieces. Then, microorganism is allowed to grow at the surface and at the same time converting alcohol into vinegar. Another important example is the production of wine and beer using yeast which is another microbe that able to convert sugars to alcohol. Nowadays, a wide range of application has been described for the development and use of natural food and additives such as antioxidants, flavors, colorants, preservatives, sweeteners and etc derived from microorganisms because they are more desirable than the synthetic one (Li et al., 2015) .