

UNIVERSITI TEKNOLOGI MARA

**MICROBIAL TRANSFORMATION OF
CARDIOVASCULAR DRUG, LERCANIDIPINE**

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TABLE OF CONTENT

	Page
TITLE PAGE	
APPROVAL SHEET	
ACKNOWLEDGEMENT	ii
TABLE OF CONTENT	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS	ix
ABSTRACT	xi
 CHAPTER 1 (INTRODUCTION)	
1.1 Background of study	1
1.2 Problem Statement	3
1.3 Significance of study	4
1.4 Objectives	5
1.5 Hypothesis	5
 CHAPTER 2 (LITERATURE REVIEW)	
2.1 Biotransformation	6
2.1.1 Advantages of biotransformation against chemical synthesis	7
2.2 Endopyhtes	10
2.3 Cardiovascular drugs	11
2.4 Calcium-channel blockers agent	14
2.4.1 Dihydropyridine	16
2.5 Lercanidipine	17
2.6 Biotransformation of cardiovascular drugs	18
2.7 Biotransformation of dihydropyridine	20

ABSTRACT

Biotransformation or also known as bioconversion, is a method of structural modification of exogenous compound into another valuable product by using organisms such as fungi or bacteria. This process is more environmental-friendly as compared to chemical synthesis. The biotransformations result in foundation of new product entities or/and useful compound that may have potential benefits. In this study, cardiovascular drug under the class of calcium channel blocker which is lercanidipine has been used as a substrate that undergone fermentation with endophytes *Penicillium lapidosum* (SSW), *Absidia coerulea*, *Cunnighamella elegans*, *Beauveria bassiana*, *Verticillium lecanii* and *Trichothecium roseum*. Techniques involved are media preparation, inoculation of fungi, feeding of substrate, incubation for 6 or 12 days and extraction using ethyl acetate. The product extracts were then analyzed by using HPLC to screen any biotransformed products.

CHAPTER 1

INTRODUCTION

1.1 Background of study

In current pharmaceutical field, there are many new drugs constantly developed in order to treat variety of diseases. New drugs can be developed through either chemical synthesis or microbial synthesis. Microbial synthesis or otherwise, known as microbial transformation is a method for structural modification of exogenous compound into another valuable product by using microorganisms such as fungi, enzymes and bacteria (Ravindran *et al.*, 2012).

Biotransformation also can be defined as a biological process by which the enzymes present in certain cells are able to catalyze simple transformation reactions (Dhand *et al.*, 2012). Furthermore, biotransformation is the only rational way to obtain compound of desired product from a precursor molecule, whereas chemical conversion usually suffers from low specificities, particularly of complex or multiple functionalized precursor molecules (Muffler *et al.*, 2011). Therefore, microbial transformation is often preferred over the chemical approach when high specificity is needed, to attack a specific site on a substrate. Biotransformation is often attractive because of the ability of microorganisms