UNIVERSITI TEKNOLOGI MARA

MICROBIAL TRANSFORMATION OF ETHINYL ESTRADIOL

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ABSTRACT

The studies on microbial transformation have been well established as an important tool for the modifications of highly complex structure like steroids. Primarily, it can be used to synthesize chemical structure that might be difficult to obtain synthetically. Currently, research has been focused on structural modifications of bioactive steroids by using various microorganisms in order to obtain biologically potent compound with diverse structure. In this study, a steroid compound which is an ethinyl estradiol has been used as a substrate and undergo biotransformation with two selected endophytes. High Performance Liquid Chromatography (HPLC) has been performed in order to identify the biotransformed products.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Steroids have highly specific reactions in order to produce funtionalized compound with the commercial value and therapeutic use and can be ranked as the one of the marketed products from the pharmaceutical industry. Steroids have a lot of the therapeutic uses such as immunosuppressive, anti-inflammatory, progestational, anabolic, diuretics and contraceptive agents (Fernandes et al., 2003). Ethinyl estradiol is one of steroidal drugs which act as the oral contraceptive. This drug widely being used by 60 to 70 million women worldwide since 1970s (Wang et al., 2004).

Steroidal drugs can be synthesised either by chemical synthesis or microbial transformation. However, microbial transformation is more preferable as compared to chemical synthesis due to the complex structure of the steroidal molecules which have a high stereo- and regio-selectivity in order for the reaction to happen (Fernandes et al., 2003). Based on the research that was being reported by the Shah et al., (2013), steroid produce for the pharmaceutical industry is now well recognized being synthesised using the microbial systems. Biotransformation or also known as microbial transformation is a method that use the microorganisms such as bacteria, fungi, and yeast. These microorganism possess multi-