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BIOTRANSFORMATION OF ETHINYLESTRADIOL, ANDROGRAPHOLIDE, TIBOLONE AND 16, 17-EPOXYPROGESTERONE USING *PERESKIA BLEO* IN THE VITRO CULTURE

NUR AINA AMEERAH CHE MOKHTAR

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ABSTRACT

Pereskia Bleo which is also known as Pokok Jarum Tujuh Bilah in Malay populationis a member of the genus *Pereskia* from the family Cactaceae. This plant is popular in the traditional treatment because it was stated that it is beneficial in treatment of some serious disease likes cancer, high blood pressure, diabetes and some inflammation problem. Due to its medicinal properties and also their wide availability, this plant was chosen as the resources for the biotransformation process. Several compounds including ethinylestradiol, andrographolide, tibolone and 16, 17-epoxyprogesterone were fermented with the callus of the *Pereskia bleo*. The media use for initiation of callus was Murashige & Skoog (MS) media which were implemented with the 6-benzylamino purine (BAP) and 1-naphthylacetic acid (NAA) hormones. The HPLC-DAD and HPLC-ELSD was used identify the biotransformed product. From the result, additional peaks with different elution times were identified in the HPLC profile of sample containing callus with the tibolone after compared with positive (media + tibolone) and negative control (media + callus). As a conclusion, fermentation of the *P.bleo* callus with tibolone was able to undergo biotransformation process.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Nature is the important resource to the human being to manage their daily life such as for food, clothes, fertilizers, transportation and others from generation to generation. Not only for the uses of daily life, they also make or use plants for example, as medication to treat disease(Newman et al., 2000). In the year 1970 – 2006, there were discovered about 24 special natural products that can be used as the drug or active ingredient in the medication. They have many characteristicssuch as having drug like properties and more easily to resemble biosynthetic intermediates or endogenous metabolitesfor active transport mechanism (Ganesan, 2008). Nowadays, natural products have become the trend by the many manufacturers as the source of the drug or active ingredient in the medication. And, there were about 100 new products in the clinical progress that used natural product resources to treat the diseases especially for anti-cancer and anti-infective (Harvey, 2008).

Pereskia bleo (*P.bleo*) from the genus of *Pereskia* is the type of Cactaceae which is also called as Pokok Jarum Tujuh Bilah by Malay people. It is different from the normal Cactaceae because of their special characteristics which consists of soft and