UNIVERSITI TEKNOLOGI MARA

EFFECTS OF SYNTHETIC MEDIA AND EPIGENETIC REGULATORS ON SECONDARY METABOLITES PRODUCTION BY SOIL FUNGI

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ABSTRACT

The type of culture media and the presence of epigenetic regulators affect the production of secondary metabolites by fungi. In general, most of the tested fungi produce more secondary metabolites when cultured in natural media (PDB) than synthetic media (Czapek). A greater amount of metabolites are also produced when 100% concentration of media is used instead of at reduced strength. With the presence of epigenetic regulators, different fungi respond differently towards them. Some of them are affected and results an addition or reduction in the amount of secondary metabolite produced while some of them do not give any respond and show no changes in the secondary metabolites profile as compared to control sample. This support the concept of using a series of media and growth conditions to explore the fungal secondary metabolism in a controlled and extensive manner.

CHAPTER 1

INTRODUCTION

The antimicrobial properties of secondary metabolites derived from various groups of fungi are widely reported, suggesting the outstanding potential of microbes as source of bioactive molecules. Secondary metabolites are organic compounds that are not involved directly in the normal growth, development or reproduction of fungi, but play an important role in interactions with the other organisms (Bennett & Ciegler, 1983). Many new and interesting bioactive metabolites such as antibiotic, having agricultural, industrial and pharmaceutical importance are isolated from soil fungi (Strobel & Daisy, 2003). Soil fungi such as *Trichoderma, Penicillium* and *Aspergillus* produce a diverse range of antibiotics. The production of antibiotics has been exploited widely in human health. Penicillin is perhaps the most commonly used antibiotic produced by fungi.

A minor change in the culture condition can affect the growth and production of secondary metabolites production by fungi. In laboratory, the most common medium used is Potato Dextrose Broth (PDB). Even though it is completely composed of natural materials with variable micronutrient composition, it cannot be controlled, and difficult to be used in metabolism studies. Besides that, epigenetic regulators also affect the secondary metabolites production of fungi. Most fungi were responsive to one or more of the chemical epigenetic modifiers by producing new