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OPTIMIZATION PRODUCTION OF SECONDARY METABOLITES OF MARINE-DERIVED FUNGI BY USING DIFFERENT MEDIA CONDITIONS

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ABSTRACT

The marine fungi culture was acquired from Batu Feringhi beach, Pulau Pinang, Malaysia. The fungi were grown in two different temperatures, which were the 28°C and 8°C and it has been shown that the fungi grew better at 28 °C compared to 8 °C. After few times of inoculations in order to obtain pure colony, the fungi were then inoculated onto three different media which are PDA, PDB and MEA and incubated for about 2 weeks at 28 °C. The fungi inoculated on agar media were homogenized before extracted by using homogenizer while the fungi inoculated in the broth are extracted directly without homogenizing the media. Samples were extracted with three times 20 mL of ethyl acetate to separate the organic phase and the medium phase. The upper layer contained secondary metabolites was obtained. The crude extracts were evaporated by using rotary evaporator and subjected for TLC visualization by spotting nine different spots of samples and developed with distinct ratios of mixtures of hexane and ethyl acetate and mixtures of hexane and acetone. Visualizations of samples were maximized when the sample was developed in the mixtures of 10% of hexane and 90% of ethyl acetate and 50% of hexane and 50% of acetone respectively. The TLC plates were then stained with anisaldehyde for further visualization. The initial profiling of secondary metabolites produced by the fungi was done by using HPLC according to the type of media the fungi grew. The chromatogram of MEA media showed more peaks as compared to PDB and PDA media.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

The investigation and the discovery of the biologically active products from the nature have been done many years ago, which give a significant benefit to the mankind. The evolution of the drug discovery started with the introduction of antibiotic called penicillin. 1928, while Fleming was looking through his research on the *Staphylococcus* sp. colonies, he accidentally identified a strain of *Penicillium notatum* has inhibited the growth of *Staphylococcus* in one of the petri dishes. Hence, the first ever antibiotic was discovered, which has the capabilities to kill broad range of bacteria.

Since then, new biologically active products have been discovered by the scientist such as Griseofulvin (**Figure 1.1**) and Cephalosporin C from *Penicillium griseofulvum* and *Cephalosporrium acremonium* respectively. These antibiotics played major role in the depleting the infectious disease for the past few years [1]. This finding has encouraged other researchers to keep on exploring the biologically active products which could be beneficial in the future to combat the emerging diseases more orderly.