UNIVERSITI TEKNOLOGI MARA

INVESTIGATION OF THE SECONDARY METABOLOME OF FUNGI FROM SVALBARD ISLANDS

BIOLOGY ADAPTATIONS OF PSYCHROPHILIC FUNGI

NUR FATIN SUHADA BINTI KAMARUL ZAMAN

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ABSTRACT

Psychrophilic fungi which are known as loving cold microorganisms are believed to produce potential secondary metabolites. Secondary metabolites are indirectly involved in organism developments compared to primary metabolites which directly involved in maintenance of life. However, secondary metabolites play a vital role in protection of plants against herbivory and other defenses of interspecies. Besides, human use secondary metabolites as medicines and flavorings. The aim of this project is to obtain the metabolic profiles of psychrophilic fungi using HPLC. In this project, the fungi were cultured in a 96-well microtiter plate. The cultures were extracted using liquid-liquid extraction and analyzed using high performance liquid chromatography. Out of eight fungi, only two of them show significant peaks whereas the rest show no significant peaks on chromatogram. Further investigation has to be done in order to determine type of compounds produced by these psychrophilic fungi.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Psychrophiles refer to the "loving cold" and these organisms have been found in every cold environment on earth. The cold environments include mountains, permafrost zone, glaciers and also oceans below 1000m in which temperature is below 5°C independently of the latitude (Gunde-Cimerman et al., 2003).

The microorganism dominated the life in extreme temperatures. Over the last decade, the Artic and Antartic regions have been investigated only for the presence of psychrophilic bacteria and Archae but very rare for fungi. Recently, it has been shown that fungi are able to sustain life and propagate at different levels of extreme temperature such as hypersaline waters and ocean depths. Besides, fungi have been isolated from extreme temperature such as permafrost, snow, water and glacier ice (Gunde-Cimerman et al., 2003).