UNIVERSITI TEKNOLOGI MARA

EVALUATION OF VARIOUS TOXIC VOLATILE COMPOUNDS ON SOME MICROORGANISMS (FUNGI) AS SELECTION TOOL

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TABLE OF CONTENTS

ABSTRACT

Several methods have been developed to select particular microbes from its sources such as use highly selective solid media, and exposing the sample of microbes to ultra-violet (UV) light and then filtrate it. However, these conventional methods are time consuming since there might be present millions or billions of microbes in a given sample, thus difficult for scientists to select from a large population the desire species. In this study, new method to select particular fungi is developed by using toxic volatile compounds as fungi selection tool. As different toxic compounds have different toxicology, and acts in a different way on different fungal species, hence, this principle is applied in a fungi selection process. 24 fungal strains and five toxic compounds were used in this study; cineole, formaldehyde, petroleum, dimethylformamide (DMF), and aniline. All the tested strains were exposed to the vapor of the toxic compounds, and the surviving fungal strains were selected for HPLC analysis to determine the metabolic changes of the surviving strains Results showed that each toxic compounds have an impact on the metabolism of the surviving strains, and only three out of five toxic compounds; formaldehyde, petroleum, and cineole are practical to be used as fungi selection tool as these compounds are more selective compared to DMF, while aniline is too toxic against all tested fungi.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

A toxic compound can be defined as any substance that is harmful to another organism (Turner *et al.*, 2008). A fungus is any organism belongs to Fungi, a kingdom of eukaryotic, heterotrophic organisms such as mushrooms, yeast and molds (Dorland's Pocket Medical Dictionary 27th Edition).

Microorganisms such as bacteria, viruses, protozoa and fungi have been studied for a long time as they are important sources of compounds with useful biological activities. Several methods have been developed to select particular microbes from its sources. The sources are either selected from its natural environments such as soils and water, indoor environment (Moularat *et al.*, 2008) or from wounds of patients with infected diseases (Mahboubi *et al.*, 2008).

Many species of soil fungi have been isolated by the conventional use of gelatin or agar media, but this method is not suitable for studies using relative large quantity of