UNIVERSITI TEKNOLOGI MARA

Isolation of Differentially Regulated Genes in Lung Cancer Cell Line by Arbitrarily-Primed Reverse Transcription Polymerase Chain Reaction

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ABSTRACT

Lung cancer is among the five main types of cancer leading to overall cancer mortality contributing about 1.3 million deaths per year globally (Khurana, 2005). The factor that lead to the lung cancer to human is primarily due to bad habit of smoking which when there is a restriction of tobacco smoking can lower the possibility of lung cancer. The aim of the study is to examine the antioxidant and anti-proliferative effects of Gelam honey in lung cancer cell line A549 and also to determine any difference in gene expression of lung cancer that being treated with Gelam honey with the untreated lung cancer. Gelam honey becomes preference because antioxidant activity is significantly higher than the other honey due to its higher phenolic content. The antibacterial system of honey able to get rid the reactive hydroxyl radicals which under the control of antioxidant action of honey (Aljadi & Kamaruddin, 2004). Gene fishing kit was used to generate gene expression profiles between gelam honey treated A549 cells versus untreated cells. Unique bands were cloned using TOPO TA Cloning Kit and sequenced.

CHAPTER 1: INTRODUCTION

1.1 Introduction

The most common cause of death from cancer among men is the lung cancer including bronchus and trachea cancers (Khurana, 2005). The cell damage and the subsequent lack of cellular repair processes due to constant oxidative damage have been associated with carcinogenesis (Gupte & Mumper, 2009). Antioxidants terminate these chain reactions by removing free radical intermediated and inhibit other oxidation reactions by being oxidized themselves (Sies, 1996).

The aim of the study is to examine the antioxidant and anti-proliferative effects of Gelam honey in lung cancer (A549) and also to determine any difference in gene expression of lung cancer that will be treated with Gelam honey with the untreated lung cancer. In Malaysia, there are several types of honey such as Tualang, Nenas, Coconut and Gelam honey. Gelam honey becomes preference because antioxidant activity is significantly higher than the other honey due to its higher phenolic content. The antibacterial system of honey able to get rid the reactive hydroxyl radicals which under the control of antioxidant action of honey (Aljadi & Kamaruddin, 2004).

1.2 Problem statements

1. An experimental study to isolate the differentially genes in lung cancer cell line by Arbitrarily-Primed Reverse Transcription Polymerase Chain Reaction after the treatment with Gelam honey.
2. There are only few genomic investigation has been done on the local honey.
3. Honey can induce apoptosis process, however the gene that play a role in apoptosis process is remain largely unknown.