

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the Study

Malaysia has plenty of herbs to be explored. Herbs are being consumed by people in the world especially in the developing countries for health remedies. Recently, interest has been growing towards herbs because herbs are belief as sources of antioxidants. Herbs plants present large bioactive compounds which provide protection against harmful free radicals and protection against development of cancers, cardiovascular diseases, diabetes, osteoporosis and neurodegenerative diseases. (Pandi and Rizvi, 2009). Nowadays, herbs have been used for variety purposes including medicine, flavorings, beverages, and industry. Numerous researches have been studied on antioxidant activities from different plant sources (Cai et al., 2004; Okonogi et al., 2007).

Antioxidants has principle function of delaying or preventing degenerative diseases caused by oxidative damage of living cell components caused by free radicals (Qader et al., 2011). Free radicals can cause of many diseases such as hemorrhagic shock, arthritis, ageing, atherosclerosis, ischemia, Alzheimer and Parkinson's disease, gastrointestinal disorders, and tumor promotion. Besides that, free radical also can be internally generated are when we expose to radiation, environmental pollutants, radiation, certain drugs, pesticides industrial solvents ozone and tobacco smoke. The examples for reactive free radicals are superoxide, hydroxyl, peroxy and alkoxy. To prevent our health from the bad effect of free radical, a lot of research has been studied to investigate the effects of antioxidants to human health.

The potential of using herbal *Pandanus amaryllifolius* (PA), *Sauropus androgynous* (SA) and *Persicaria odorata* (PO) as a natural antioxidant for food applications were investigated. Total phenolic content (TPC) of herbs was determined

using Folin-Ciocalteu reagent assay and antioxidant activity were analyzed by using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity. The determination of TPC and antioxidant activity was done for each plant extract by using pure ethanol as solvent, different concentration of ethanol aqueous solutions, including 95%, 75%, 50%, 25% and 0%.

## **1.2 Motivation**

Natural additives from plants are suitable for food preservative due to the naturally formed of antioxidant compound. Plant with antioxidant can replace the use of synthetic antioxidant and reduce the toxic which can stimulate cancer cell to consumer. The natural antioxidant also gives benefits to consumer by their pharmacological compounds. Antioxidants functioning in delaying or preventing degenerative diseases caused by oxidative damage of living cell components caused by free radicals (Qader et al., 2011).

## **1.3 Problem Statement**

Malaysian herbs have been known as containing higher quantity of antioxidant compound but some of them still lack in scientific data towards the potential of their antioxidant activity. Role of antioxidants is to prevent many several diseases like cancer and aging. Natural antioxidant from herbs is safer for human body compared to the synthetic antioxidant. This research was conducted to explore phenolic content and antioxidant activity in three local herbs. The herbs have been chosen because of their potential source of antioxidant. Based from the result of the antioxidant activity, analysis on antimicrobial of these herbs was conducted. Antioxidants in these herbs are very useful for human health. It is free from side effects compared to synthetic antioxidants.

## **1.4 Objectives**

The following are the objectives of his study:

- 1) To investigate the total phenolic content from some Malaysian plant: *Pandanus amaryllifolius* (Pandan), *Persicaria odorata* (Kesum) and *Sauropus androgynous* (Cekur manis).

- 2) To perform free radical scavenging assay (DPPH) against plant extract to determine the antioxidant activity of plants.

### **1.5 Scopes of Study**

In order to achieve the objectives, there are few scopes of work that have been identified as follows:

- i. Perform the different concentration of solvent in extraction process.
- ii. Determination of the total phenolic content of three herbal plants extracts using the Follin-Ciocalteu method.
- iii. Determination of of antioxidant activity of three herbal plants using DPPH scavenging assay.