

CHAPTER I

INTRODUCTION

1.1 Background

Diet can significantly alter the overall health and quality of life. Dietary treatment plays an important role in preventing the diseases that have no medicine to cure once the disease is established. Cancer, the leading cause of death and coronary heart disease (CHD) are two such diseases. The fact is the reactive oxygen species (ROS) generated during cellular metabolism or lipid peroxidation play a causative role in pathogenesis of cancer and CHD. Antioxidant is compounds that show reducing activity and protects the components of cells and biomolecules from oxidation by scavenging or donating an electron atom to free radicals such as superoxide, hydroxyl, and peroxy radicals. It also can avoid the oxidation of lipid, protein, and nucleic acid that is caused by reactive oxygen species or free radical (Lim and Tee 2006). Dietary treatment may terminate ROS attack and reduce the risk of cancer and CHD.

Parkia speciosa or commonly known as petai is a well-known vegetable in Indonesia and the other south East Asia countries such as Malaysia, Thailand, and Japan. Petai can be found in many regions in Indonesia easily. Many people in Indonesia usually dislike eating petai because of the stinky odor, but actually petai is one of many vegetables that contain antioxidant compounds. The research before by Amarnath (2004), proved that it contains anthocyanin, phenolic compounds and vitamin C and is very good for health.

Growth locations, processing methods, and vitamin C elimination are interesting factors to be investigated whether they can influence the antioxidant activity or not. The geographical growth location surely will affect the condition of petai. Gisslen (2009) also stated that heat applied to food would stimulate the molecules changes of the food itself, because of that heat processing methods such as frying, steaming, and boiling are suggested to affect the antioxidant activity of the petai. Beside that, vitamin C is a well-known antioxidant compound as well in petai. The elimination of vitamin C through oxidation process is also expected to influence the antioxidant activity of petai. Therefore, the study regarding the antioxidant activity based on the different growth location, processing methods, and vitamin C content should be done.

1.2 Research Problems

Antioxidant activity from *Parkia speciosa* has already been analyzed before, but the sample used is obtained from the same source (Amarnath, 2004). Different growth location, processing methods such as frying, boiling, steaming, and vitamin C elimination of *Parkia speciosa* are expected to influence the antioxidant activity of *Parkia speciosa* itself. However, the analysis regarding the antioxidant activity based on the different growth location, processing methods, and vitamin C elimination has never been done before. Because of that problem, this analysis will be done.

1.3 Objective

1.3.1 General Objective

The general objective of this research is to know the antioxidant activity of *Parkia speciosa* based on different location, processing methods, and vitamin C content.

1.3.2 Specific Objectives

The specific objectives from this research are:

- 1) To know the effect of different locations to the antioxidant activity of *Parkia speciosa*
- 2) To know the effect of different processing methods compare to the raw *Parkia speciosa* regarding antioxidant activity of *Parkia speciosa*
- 3) To know the influence of vitamin C elimination regarding the antioxidant activity of *Parkia speciosa*

