UNIVERSITI TEKNOLOGI MARA

ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES OF *PANDANUS CONOIDEUS* LAMK

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ABSTRACT

An antioxidant is defined as a substance that can delay and destroy excess free radicals and repair oxidative damage in biomolecules. The antioxidants are believed to play a very important role in the body defence system against reactive oxygen species (ROS), which are the harmful by products generated during normal cell aerobic respiration. Increasing intake of dietary antioxidants may help to maintain an adequate antioxidant status and, therefore, the normal physiological function of a living system. Our study of interest is to investigate the antimicrobial and antioxidant properties of *P. conoideus* extract by using different assays. *P.conoideus* found to be one of the potential natural antioxidant and sources and able to boost up the body immune system. The determination of antioxidant properties were carried out by using four different assays, specifically total phenolic compound, DPPH radical scavenging assay, xanthine/xanthine oxidase superoxide scavenging assay, and tyrosinase inhibitory assay while the antimicrobial properties of this extract was determined by using the micro-broth dilution method. The *P.conoideus* extract was found to have antioxidant properties but no positive result shown for the antimicrobial screening of the extract. It was observed that the highest antioxidant capacity of the extract was shown when xanthine/xanthine oxidase superoxide scavenging assay was used relative to the other three methods.

CHAPTER 1

INTRODUCTION

1.1 Background

Oxidation is vital to many living organisms to produce energy to fuel biological processes such as ATP production which occur in mitochondria. But, during this process, a large amount of oxygen centered species such as superoxide radicals, singlet oxygen, hydroxyl radicals and other reactive oxygen species (ROS) are also generated (Cadenas *et al.* 2000). These radicals are known to have both beneficial and destructive actions in biological tissues. The deleterious effects of these radicals are due to their ability to cause cell death and oxidative damage to DNA which has been related to cause various types of cancer, and neurodegenerative diseases.

In all aerobic cells, ROS normally existed in equilibrium with biochemical antioxidants. An antioxidant is defined as a substance that can delay and destroy excess free radicals and repair oxidative damage in biomolecules (Vimala *et al.* 2003). Antioxidants may cease direct ROS attacks and reduce the extent of damage caused by free radicals, and therefore appear to be essential at the preventive stage of these diseases and other health problems.