

UNIVERSITI TEKNOLOGI MARA

**EFFECTS OF AQUEOUS EXTRACT OF
MYRMECODIA PLATYTYREA ON NON-SPATIAL
MEMORY IN MICE USING OBJECT
RECOGNITION TEST**

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ABSTRACT

Alzheimer's disease (AD) is the most common neurodegenerative disease that induces memory impairment and dementia in the elderly. Pathologically AD is characterized by increased levels of the amyloid- β (A β) peptide and hyperphosphorylated tau protein (p-tau). It occurs in part due to oxidative stress (OS) and inflammation, normally associated with aging. OS is caused by unbalanced overproduction of reactive oxygen species (ROS) that can induce neuronal damage and finally, leading to neuronal death by apoptosis or necrosis. The extract of *Myrmecodia platytyrea* has been used traditionally in Asia for treatment of diarrhea, headaches, swelling, and hemorrhoids. Previous studies have shown that the extracts have potent antioxidant activity. Therefore, this study was carried out to investigate the effects of *Myrmecodia platytyrea* on non-spatial memory in Swiss mice using object recognition test. Mice were force-fed with 500mg/kg of *Myrmecodia platytyrea* throughout the duration of the study (21 days). D-galactose (150mg/kg) was used as negative control to mimic some characters of cognitive impairment and oxidative damage. The study showed that the group treated with D-galactose + *Myrmecodia platytyrea* was able to discriminate the novel from familiar objects.

Keywords: Alzheimer's disease; Oxidative stress; Antioxidant; D-galactose; *Myrmecodia platytyrea*; Object recognition test

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Dementia is characterized as a deterioration of cognitive function and behavior, as a consequence of degenerative brain damage (Reitz, Mayeux, & Brayne, 2012). Malaysia is one of the developing countries which have a population that stands at over 28 million people with proportions of 50.4% Malay, 23.7% Chinese 11% indigenous, 7.1% Indian and 7.8% others (Nikmat, Hawthorne, & Al-mashoor, 2011). It is projected that the proportion of the total population who are elderly will continue to increase from 6.3% in 2000 to 12% by the year 2030 (Figure 1.1) (Nikmat et al., 2011). At present, the number of Malaysians aged 60 years and above is estimated to be 1.4 million and in 2020, it is projected to increase to 3.3 million (Mafauzy, 2000). The growing numbers of older adults will contribute to the increasing susceptibility to disease such as dementia. According to the Alzheimer Disease International report, the prevalence of dementia in Malaysia in 2005 was 0.063% and the annual incidence rate 0.020%. It is expected that this figure will increase to 0.126% and 0.454% in 2020 and 2050 respectively (Nikmat et al., 2011). Dementia is ranked as the second most prevalent disease in Asia Pacific Region compared to sexually transmitted diseases (excluding Human Immunodeficiency