UNIVERSITI TEKNOLOGI MARA

DOSE RESPONSE STUDY OF BISPHENOL A (BPA) TOWARDS THE INDUCTION OF OXIDATIVE STRESS IN THE BRAIN OF FEMALE SPRAGUE DAWLEY RATS

MUHAMMAD SOLLEH BIN RAHIM

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ABSTRACT

Bisphenol A (BPA) is a chemical produced in large quantities for use primarily in the production of polycarbonate plastics and epoxy resins. BPA can induce oxidative stress of the rats. Chitra *et al.*, (2003) reported that BPA elicit depletion of the antioxidant defense system and induces oxidative stress in the epididymal sperm of rats. This study investigated the modification of Bisphenol A (BPA) doses which is 50 µg/kg/day, 500 µg/kg/day, 1000 µg/kg/day and 5000 µg/kg/day and its effect to the oxidative stress in the brain of female Sprague Dawley (SD) rats. Rats were given four different doses of BPA, which are 50 µg/kg/day, 500 µg/kg/day, 1000 µg/kg/day and 5000 µg/kg/day by force feeding for two weeks. At the end of second week of treatment, female SD rats were sacrificed. Exposure to BPA reduced the ratio brain to body weight. Exposure to BPA decreased the wet weight of the brain, kidney and testis (Kabuto *et al.,* 2003). However, it increased body weight of female SD rats after two weeks treatment. Unfortunately, levels of glutathione peroxidase (GPx) and antioxidant (AO) concentration were not change significantly. Level of GPx activity is $p=0.358$ while AO concentration is $p=0.257$.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Bisphenol A (Figure 1) commonly abbreviated as BPA or its chemical name is 2,2-bis-(4-hydroxyphenyl)-propane (Kabuto *et al.*, 2003) is an organic compound with two phenol functional group. BPA widely used as a material for the production of epoxy resins, phenol resins, polycarbonates, polyacrylates, polyesters and lacquer coatings on food cans (Staples *et al.*, 1998). These plastics are used in many foods and drink packaging applications, while the resins are commonly used as lacquers to coat metal products such as food cans, bottle tops and water supply pipes. Products containing or made from BPA have been in the market for more than 50 years and it uses are numerous.

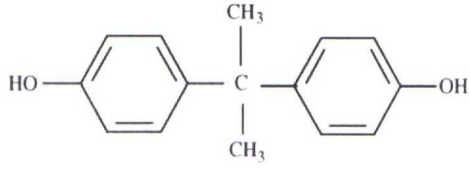

Figure 1.1 Molecular structure of Bisphenol A (Tsai *et al.*, 2006)