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GENE EXPRESSION CHANGES IN MALE REPRODUCTIVE SYSTEM OF TIME RESPONSE BISPHENOL A (BPA) TREATED SPRAGUE-DAWLEY RATS

AMILIA BINTI ABD RAZAK

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ABSTRACT

BPA is an environmental estrogen. It can leach from plastic tableware and from the coating of food and drink cans and orally exposing human being to the compound. This study was aimed to carry out a research on the gene expression changes in male reproductive system of time response Bisphenol A (BPA) treated Sprague-Dawley rats. Concern is mounting regarding the effects of BPA which is a high-production-volume chemical used in synthesis of plastics to the reproductive systems. 100 mg/kg/day of BPA was fed orally to juvenile male rats at the different time of exposure which is 7 days, 14 days and 28 days. Ethynilestradiol was used as the positive control in the study. Male Sprague-Dawley rats PND 28 were treated with BPA to evaluate the gene expression changes of estrogen receptor (ER) α, ERβ and also androgen receptors. It is expected that BPA will cause over expression of ERα and ERβ and inhibition of androgen receptors. However, this result was not obtained due to lower RNA concentration extracted from the testes. BPA also was found to increase the body weight and reduced the organ weight, which is testis of the treated rats. It can be concluded that BPA will alter the body weight and also the testes weight of the treated rats.

CHAPTER 1

INTRODUCTION

1.1 Introduction

There are several numbers of industrial chemicals that have been reported to act as endocrine disruptors in animal and other mammals (Hoyer, 2001). One of these industrial chemical is bisphenol A (2,2-bis[4-hydroxyphenyl]propane) or also known as BPA.

BPA is an environmental estrogen. It can leach from plastic tableware and from the coating of food and drink cans and orally exposing human being to the compound. Many studies have been done regarding the human health and environmental effects of BPA which is chemical that being produced in high volume every year. BPA can give effects similar to the effect seen in response to model estrogens ethynilestradiol (EE) and diethylstilbestrol (DES). The potency of BPA is approximately 10-1000-fold less than that of EE and DES (Richter *et al.*, 2007).

Widespread exposure to BPA possesses a threat to human health. Exposure of this chemical compound has different effects depending on the life stage of the exposed animals. Exposure of xenoestrogens such as BPA during early development may cause the incidence of infertility, general tract abnormalities and also breast cancer