UNIVERSITI TEKNOLOGI MARA

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

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ABSTRACT

The aim of the research is to study the effects of high dose of Bisphenol A (BPA) exposure towards the expression of gene in female reproductive system together with the weight changes of the reproductive organs and the body weight in time response. Female Sprague-Dawley (SD) rats had been used in this study and were assigned to three groups according to the treatment consist of control (vehicle treated), positive control (10μg/kg/day ethinyl estradiol) and BPA treated (100 mg/kg/day) in different duration of time which is 7, 14 and 28 days. The rats were weighted daily and being sacrificed 24 hours after the last treatment which is on PND 35, 42 and 56 days. Pair of ovary is taken and kept well in the -80°C fridge. The primer for gene of interest is designed in appropriate to the gene of interest. RNA template is prepared and undergone RT-PCR before the electrophoresis process takes place using agarose gel. For body weight and organ weight, analysis of variance (ANOVA) and *post hoc* Tukey test had been performed to analyze the significant differences among the treated group. The finding showed that the exposure of high dose of BPA 100 mg/kg/day may reduce body weight gained by female SD rats and inconsistently increased the weight of reproductive organs. Gene expression changes cannot be determined in this study due to the failure in amplifying respective gene possibly caused by several errors.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The U.S.-Environmental Protection Agency (EPA) has defined an environmental endocrine disruptor or endocrine disrupting chemical (EDC) as "an exogenous agent that interferes with the production, release, transport, metabolism, binding, action, or elimination of natural hormones in the body responsible for the maintenance of homeostasis and the regulation of developmental processes (Kavlok *et al.*, 1996). However, endocrine disrupting effect does not limited to the estrogen system, but other endocrine systems including effects mediated by androgens, thyroid hormone, prolactin, and insulin (Wetherill *et al.*, 2007).

Bisphenol A (BPA) is the monomer used in the manufacturing of polycarbonate worldwide. It is produced through reaction of phenol and acetone with acid catalyst. From a previous study done by Krishnan AV, it was shown that estrogenic substance (BPA) released from polycarbonate flask during autoclave. Over 6 billion pounds per year of the estrogenic monomer BPA are used to manufacture polycarbonate plastic