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DETECTION OF PROTEIN CHANGES IN FEMALE REPRODUCTIVE SYSTEM OF DOSE RESPONSE BISPHENOL A TREATED SD JUVENILE RATS

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TABLE OF CONTENTS

ABSTRACT

Bisphenol A or BPA are used in the production of epoxy resins and polycarbonate plastics. Other applications of BPA are in baby bottles, canned food and drinks and polymers contained in dental treatment. BPA is a type of xenoestrogen that has been shown to mimic the actions of estrogen. Particularly in females, BPA causes ovarian disease, stimulation of mammary gland, onset of sexual maturation and disruption of the estrous cycle. Other than that, BPA can also stimulate human breast cancer cell. The dose and the effects of BPA on the reproductive system vary. The effects of BPA on the early onset of sexual maturation in females was seen at 2.4 and 500μg/kg/day, the stimulation of mammary gland in female offspring occurred at very low dose of 0.025μg/kg/day and BPA disrupts the adult estrous cycle at the dose between 100 and 500μg/kg/day. To determine the concentration of protein in female rats, we force-feed the rats with dose of BPA ranging from 50, 500, 1000 and 5000μg/kg/day and using SDS PAGE to observe the intensity of the concentration of protein in each sample. In our study, the concentration of proteins in the group of rats fed with 50 and 500μg/kg/day increased above the concentration of proteins in the negative control groups especially in the group with the 500μg/kg/day dose which was almost similar to concentrations detected in the positive control. However, at 1000μg/kg/day, there was almost no protein and at 5000μg/kg/day the concentration of protein was similar to the negative control group. Based on the weight of ovary, the negative control and the group fed with 1000 and 5000μg/kg/day had increased weight compared to the other groups which shows that a lower concentration of protein correlates with increased of ovary weight. However, further analysis using Western Blot needs to be carried out in the future so that the specific band and concentration for estrogen and progesterone could then be observed and analyzed.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The production of epoxy resins and polycarbonate plastics uses Bisphenol A (BPA). These are applied in many baby bottles, canned food and drinks. Some polymers contained in dental treatment also contain BPA. It is an organic compound consisting of two phenol groups and is prepared from the condensation of acetone which gives its name an A suffix. BPA is a xenoestrogen that has been shown to mimic estrogenic actions. The estrogenic activity of BPA was actually discovered serendipitously when investigators from Stanford University identified an estrogen-binding protein in yeast and then investigated whether yeast have an endogenous ligand. However, after first reporting that yeast produce estradiol (Feldman *et al.* 1984), they found out that the estrogenic activity did not originate from the yeast, but from culture media that were prepared with water autoclaved in polycarbonate flasks. The liquid in some cans of tinned vegetables have been found to contain both BPA, and the related chemical dimethyl BPA. The highest levels of BPA were found in cans of peas, with an average of 23 μg per can. Other liquors containing BPA were from cans of artichokes, beans, mixed vegetables, corn and mushrooms. It has been known that scratched bottles will leach BPA into its liquid content. US Food and Drug administration research has found that BPA leaches from infant formula cans