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Determination of Protein Concentration Changes and Body Weight Changes in Females Sprague-Dawleys (SD) Rats Treated With Different Doses of BPA

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ABSTRACT

Nowadays, the use of plastic material is increasing rapidly. BPA is one of the highest-volume chemicals and is produced in excess of 6 billion pounds per year for use as the monomer that is polymerized to manufacture polycarbonate plastic food and beverage containers, the resin lining of metal cans, dental sealants, and as an additive in a wide array of other products. Until recently, BPA had been considered to be a very weak environmental estrogen because of its low ER affinity and because in many bioassays, BPA can be 10,000- to 100,000-fold less potent than estradiol. Therefore, this research is carried out to determine whether low dose of BPA can induce protein concentration changes. Our result showed that BPA can induce protein concentration changes in female rats but the trend is inconsistent. BPA also has effect on weight of animal study. All the BPA dose used in this study induce weight gain higher than positive control treatment. Our study also showed that when increasing dose of BPA were given to SD rats, the female reproductive organ such as uterine horn and ovaries will increase in weight.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Over the past decade, humans have been exposed to the estrogen-mimic bisphenol A (BPA), a chemical used in agriculture and medicine, inadvertently as byproduct of industrial use, or as waste released into rivers, lakes and into the atmosphere. BPA is a chemical compound used in manufacturing polycarbonate plastic and epoxy resins. Polycarbonate plastic and epoxy resins are used as linings on many consumer products and also used in the manufacturing of flame retardants, making BPA one of the most widely used chemical worldwide. Exposures may occur at home, especially on the widespread usage of plastic household products and personal items containing BPA (Kang *et al.*, 2003) such as food and drink containers, plastics bottles, baby bottles, dental sealants, automobile parts and many more.

1.2 Bisphenol A

BPA is an organic compound with two phenol functional groups (Figure 1.1). It acts as a building block of several important polymers and polymer additives. It is an