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HISTOLOGICAL CHANGES IN MALE REPRODUCTIVE SYSTEM OF DOSE RESPONSE BISPHENOL A (BPA) TREATED SPRAGUĒ- DAWLEY (SD) RATS

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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 is also act as potential endocrine disruptor which it mimics the action of estrogen and lead to disorder of reproductive system. In this study, four groups of SD rats were administered orally at different dose (50μg/kg/day, 500μg/kg/day, 1000μg/kg/day and 5000μg/kg/day) treatments for 2 weeks. Others groups of SD rats were administered orally with 10μg/kg/day of ethinylestradiol (EE) for 2 weeks. The observations and analysis made in this study was the determination of histological changes in the testis of SD rats when exposed to different doses. Testes were histologically examined by light microscopy at 8 weeks of age. Result indicates that at 50μg/kg/day, there were any no abnormalities found but at 500μg/kg/day, result indicates seminiferous tubule (ST) showing histological abnormality including some changes such as shape of ST was affected, wider interstitial space area was observed and also viewing loss of luminal space. At higher doses of 1000μg/kg/day and 5000μg/kg/day, the abnormality of ST is still observed. The results of the present study show that higher dose of BPA may cause more harmful effects to the SD rat male reproductive system.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Bisphenol A commonly abbreviated as BPA, is a chemical produced in large quantities for use primarily in the production of polycarbonate plastics and epoxy resins (John Koshuta, 2008; Lang *et al.,* 2008; vom Saal and Myers 2008). Worldwide, approximately 2.5 million tones BPA per year were produced (Staples *et al.,* 2002). It exists at room temperature as a white solid and has a mild hospital odor (National Toxicology Program (NTP), 2008).

The objective in production of BPA in the 1930s is to search for synthetic estrogens but another compound that is called diethylstilbestrol was determined to be more powerful than estrogen itself, so BPA was not used as a synthetic estrogen (John Koshuta, 2008). BPA mimics the action of estrogen which is a hormone that is part of the endocrine system. BPA is also a potential endocrine disruptor (Okada H *et al.,* 2008) that can directly mimic endogenous hormones, antagonize the natural condition of endogenous hormones or change the rate of synthesis and metabolism of natural hormones which cause harmful effects to unborn or newborn child (vom Saal and Myers 2008). Lower doses of BPA can possibly cause negative health effects (O'Connor and Chapin 2003). Long term exposure to BPA causes harmful side effects like breast cancer, testicular