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DOSE RESPONSIVE HORMONAL CHANGES IN FEMALE REPRODUCTIVE SYSTEM OF BISPHENOL A (BPA)-TREATED *SPRAGUE-DAWLEY* RATS

NURUL HIQMA BINTI ISMAIL

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Nurul Hiqma Binti Ismail

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ABSTRACT

The demands towards BPA-based products keep on increasing each year higher, and this situation leads to much bigger exposure of BPA towards human and environmental. In the study, 28-days-old female SD rats were administered with BPA (50, 500, 1000 and 5000 μg/kg/day), ethinylestradiol and Tween 80 for 14 days and administration was done via force feeding. The plasma concentration of estriol (E_3) and progesterone was quantified by ELISA. The plasma concentration of both hormones and mean difference of body weight (day-1 to day-15) were analyzed using ANOVA with *P* value less than 0.05 was considered statistically significant. In conclusion, the study demonstrated that increased dose of BPA reduce the level of progesterone concentration. It was shown that different high doses of BPA resulted in inconsistency of plasma concentration of E_3 and difference mean of body weight. The study also reported highest plasma progesterone concentration related to treatment with Tween 80, which suggests that Tween 80 may have effects on female reproductive hormones.

Keywords: Bisphenol A, progesterone, estriol

CHAPTER 1

INTRODUCTION

1.1 Introduction

Issues about leaking of chemical into the plastic content had raised concern among people nowadays especially parents. This is due to the widely usage of polycarbonate plastics in the manufacturing of babies' products such as toys, pacifiers and milk can.

Bisphenol A (BPA) is an endocrine disrupting chemical. World Health Organisation (WHO) define endocrine disrupter as an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes health effects in an intact organism, or its progeny or (sub)population. BPA also known as one of the environmental estrogens, a group of chemicals that mimic the estrogenic actions (Le *et al.*, 2008). Studies have been shown that BPA binds weakly to both estrogen receptor (ER)-α and ER-β. BPA act as weak estrogen because it is less potent than 17β-estradiol when interact with estrogen receptors about 1000 to 2000-folds.