



**EFFECT OF ORAL SUPPLEMENTATION
OF PALM OIL
TOCOTRIENOL-RICH FRACTION
ON OOCYTES AND REPRODUCTIVE ORGAN
OF FEMALE RATS**

By

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AUTHOR'S DECLARATION

"I hereby declare that this thesis is my original work and has not been submitted previously or currently for any other degree at UiTM or any other institutions."

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ABSTRACT

Infertility is a biological inability of an individual to conceive and many cases are related to female infertility. Palm oil tocotrienol-rich fraction (TRF) was demonstrated to have a potential antioxidant to provide protection against adverse effect of oxidative stress related to female reproductive system. This was performed to investigate the effect of oral supplementation of palm oil TRF on oocyte and reproductive organ of female rat model. 30 mg/kg, 60 mg/kg and 90 mg/kg of palm oil TRF were prepared from Gold Tri.E™. Thirty (30) adult female Wistar albino rats were randomly divided into 5 groups (n=6). Control negative group was administered with distilled water (*ad libitum*, G1), control positive group was administered orally with corn oil (0.1 ml, G2) and treatment groups were administered orally with corn oil and palm oil TRF at doses of 30 mg/kg, 60 mg/kg and 90 mg/kg (G3-G5). After seven consecutive days of treatment, blood collection was performed by using a guillotine with a sharp blade to cut neck close to the head for biochemical analysis. Oviducts were collected for oocyte analysis. Results of oocyte count and grading of cumulus-oocyte-complexes (COCs) showed no significant different between treatment groups and control groups. Oocyte count was increased in rats treated with 60 mg/kg of palm oil TRF compared to other groups. Grading of COCs also showed increment of normal COCs in rat treated with 60 mg/kg of palm oil TRF. Assessment of hepatotoxicity and nephrotoxicity evaluated that hepatotoxicity and nephrotoxicity effects of high dose group (G5). Histopathological finding has revealed significantly increase of ovarian surface epithelium (OSE) height in high dose group (G5). This study suggested that lower and higher doses of oral supplementation of palm oil TRF may increase quality of oocyte and also may cause adverse effects on liver and kidney, respectively. Further studies should be carried out to explore precisely on the effect of different doses of oral supplementation of palm oil TRF especially in female reproductive system.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Reproductive health can be defined as a state of complete physical, mental, social well-being and absence of any disease that is concerning to processes, functions and systems of reproduction at all phases of life. Instance, reproductive health involves safe sex life and capability to reproduce which provides couples to having a healthy baby (Glasier *et al.*, 2006). Since the last decades, reproductive health among women and men has been improved. Reproductive healthcare is one of the contributing factors which contribute to positive effects on the reproductive health and well-being. It is involved of methods, techniques and services in preventing and solving the problems of reproductive health (Newman *et al.*, 2014).

Female reproductive health plays important role in improving maternal and child health (AbouZahr, 2014). It is recognized that biological factor is a vital key which acts throughout the entire lifetime to determine health outcomes. Therefore, focusing in the female reproductive health is an investment for the present and also for the future generations (Hoyt & Falconi, 2015). Meanwhile, a vital component of reproductive health that has often been neglected is infertility. According to the World Health Organization (WHO), infertility can be defined as a disease of reproductive system which causes by the failure to achieve pregnancy after 12 months or more of regular unprotected intercourse. Infertility can be classified into primary and secondary infertility. Primary infertility is an inability to bear any live child while secondary infertility is an inability to carry an additional live birth. Throughout the world, it was estimated