

UNIVERSITI TEKNOLOGI MARA

**TESTICULAR 5 ALPHA REDUCTASE (TYPE 2)
EXPRESSION AND DIHYDROTESTOSTERONE (DHT)
HORMONE LEVEL IN MALE SPRAGUE-DAWLEY RATS
TREATED WITH *EURYCOMA LONGIFOLIA* AND
*POLYALTHIA BULLATA***

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ABSTRACT

An aqueous extract of *Eurycoma longifolia* (*EL*) or known as *Tongkat Ali* roots is traditionally used as natural alternative for testosterone replacement therapy and has been proven to increase serum testosterone level. *Polyalthia bullata* (*PB*), or also known known as *Tongkat Ali Hitam* had been consumed widely as people assuming it has aphrodisiac property because it shares the same name as *Tongkat Ali*. Because previous studies are limited to only on testosterone concentration, this study investigated the *in vivo* effects of both *EL* and *PB* on body and reproductive organ weight, DHT concentration as well as 5 α reductase expression in healthy male Sprague-Dawley rats. Twenty-four male rats were divided into a control (n=8), *EL* 800mg/kg group (n=8), and *PB* 800mg/kg (n=8). The control group was given distilled water. Rats were force fed for 14 days and sacrificed 24 hours after the last treatment. Total body and reproductive organs (testes, epididymis, prostate and seminal vesicle) weight were recorded. Moreover, DHT concentration level was determined by using enzyme-linked immunosorbent assay (ELISA) method using the blood serum from the rats. The gene expression of 5 alpha reductase was carried out by Real-time PCR and measured by relative quantitation method ($2^{-\Delta\Delta Ct}$). *PB* significantly decreased the body weight of the rats ($p < 0.05$) while there were no significant changes in weight of the reproductive organs between all the experimental groups. DHT concentration in the rats showed significantly increased for both *EL* and *PB* compared to control ($p = 0.027$, $p = 0.040$). Gene expression of 5 α reductase showed an upregulation trend by 0.86 fold for *EL* group but yet not significantly. Therefore, the above study provides

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

An aphrodisiac is defined as an agent that enhance the sexual drive of the person consuming the substances, thus will arouses the sexual performance. The substance includes foods, scents, beverages, drinks, mineral supplements, or synthetic chemicals. Aphrodisiac can be categorized according to their effects either by psychological or physiological. Aphrodisiac can act psychologically by increasing sexual desire and stimulating mood properties. Besides that, aphrodisiac also have physiological effects, such as enhancing erection, increased blood flow as well as smooth muscle relaxing properties. The study had be made by Kotta et al. (2013) and Asiah et al. (2007) stated that the extract of *Eurycoma longifolia* and *Polyalthia bullata* both have been proven to have aphrodisiac property.

Besides that, Patel et al., 2011 stated there are other traditional plants such as *Rafflesia* sp, *Terminalia catappa* and *Labisia pumila* are also claimed to have aphrodisiac property and they are being practiced in the management of sexual dysfunction all over the world, such as Greek, Rome, India, China and Egypt. Most people prefer to have the traditional ways to treat the sexual problem compared with the modern ways. This due to a questionnaire based study of respondents living in the state of Penang and the results showed that most respondents prefer using specific traditional medicines for aphrodisiac purpose as they were easily available and cheaper compare with modern (prescription) medicines (Hassali et al., 2012).