

UNIVERSITI TEKNOLOGI MARA

**TESTICULAR 17 BETA-HYDROXYSTEROIDS
DEHYDROGENASE AND SERUM TESTOSTERONE
LEVEL IN MALE SPRAGUE-DAWLEY RATS
TREATED WITH *EURYCOMA LONGIFOLIA* AND
*POLYALTHIA BULLATA***

MUHAMMAD BIN SAMSUSAH

**Dissertation submitted in partial fulfilment of the requirements for the
Bachelor of Pharmacy (Hons.)**

Faculty of Pharmacy

2017

ACKNOWLEDGEMENT

I would especially like to thank my supervisor, Dr. Gurmeet Kaur A/P Surindar Singh and co supervisor, Dr. Mashani Mohamad for guiding and leading me for this project. I would like to express my special thanks of gratitude to my father, Samsusah Mohd Tan, my mother, and my family members (Noor Sharyina, Nur Syahirah and Nur Syafiqah) for their support throughout this project. I am using this opportunity to express my gratitude to Siti Salihah Ahmad for all the support throughout this project. I would also like to thank all my colleague that help me for this project (Muhd Fiqri, Umair Al Hadi and Adilah) and my housemates for always be there for me through thick and thin. I would like to convey my gratitude to Brain Research Laboratory and Faculty of Pharmacy for their support throughout this project. I am grateful to ALLAH for the good health and wellbeing that were necessary to complete this task.

TABLE OF CONTENT

APPROVAL SHEET	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF FIGURES.....	vii
LIST OF TABLES	ix
LIST OF ABBREVIATIONS	x
ABSTRACT	xii
 CHAPTER 1:	 1
INTRODUCTION.....	1
1.1 INTRODUCTION.....	1
1.2 PROBLEM STATEMENT	3
1.3 RESEARCH OBJECTIVES	4
1.4 HYPOTHESIS	4
1.5 SIGNIFICANCE OF THE STUDY	5
 CHAPTER 2:	 6
LITERATURE REVIEW.....	6
2.1 APHRODISIAC	6
2.1.1 Aphrodisiac Properties	6
2.1.2 Aphrodisiac Plants	7
2.1.2.1 <i>Tribulus Terrestris</i>	7
2.1.2.2 Horny goat weed (<i>Epimedium</i>).....	9
2.1.2.3 <i>Muiru puama</i> (potency wood)	10

ABSTRACT

The most popular traditional herbs that is used as aphrodisiac in Malaysia is *the Eurycoma longifolia* (Simaroubaceae family) also known as Tongkat Ali by locals in Malaysia. It is famous for its aphrodisiac activity and traditional supplement for the enhancement of sexuality and fertility. *Polyalthia bullata* (Annonceae family) or famously known as Tongkat Ali hitam is also one of the traditional herbs that is claimed to same aphrodisiac properties as *E. longifolia*. However, this claim has not yet proven. This project was conducted to provide evidence for the given claim by measuring testosterone level, morphometric changes and the gene expression of 17 β HSD, which is the enzyme for production of testosterone. The experiment was conducted using 24 healthy male Sprague-Dawley rats. The rats were divided into 3 groups which is the control group (treated with distilled water) and two treatment groups (treated with *E. longifolia* and *P. bullata* extract). They were treated for 14 days. Treatment groups were given the dose 800mg/kg for both extract. Testosterone level was measured by using enzyme-linked immunosorbent assay (ELISA) kit. 17 β HSD expression was determined by using Real-time PCR and fold change was calculated using relative quantitation method ($2^{-\Delta\Delta ct}$). Result of morphometric changes showed that only *P. bullata* significantly decreased in body weight ($p<0.05$) and no significant difference in reproductive organs weight between all groups. Testosterone level significantly decreased for *P. bullata* treated group when compared to control ($p<0.05$). 17 β HSD expression shows a significant upregulation ($p<0.05$) with fold change of 1.13 for the *E. longifolia* treated rats. In conclusion, this project provide further insight on the morphometric changes, testosterone level, and 17 β HSD expression of the rats treated with *E. longifolia* and *P. bullata*. However, further study should be conducted to provide the full insight of the effects of consuming *E. longifolia* and *P. bullata*.

CHAPTER 1:

INTRODUCTION

1.1 INTRODUCTION

The study of enhancing sexual activity has been conducted for generations (Krychman et al. 2007). From this studies, lots of chemicals, minerals, food or drugs are identified as aphrodisiac. Aphrodisiac is defined as any agents that have the ability to enhance sexual activity, sexual arousement or libido. Although aphrodisiac scientific basis is still not well understood, their bioactive properties that enable them to enhance the sexual activity had been observed and used by societies (Melnik & Marcone 2011). Malaysian population have been using herbal medicine for ample of reasons. Frequent use of the herbal medicine may be due to the belief that herbs and plant derived compounds may give positive impact on the libido, sexual health and may also overcome sexual problems. The perception that traditional and complementary medicines (TCM) is far safer than chemically modified drugs is one of the contributing factor of why Malaysian more likely to use traditional herb (Hassali et al. 2012). Yohimbine and Mandrake are one of the many natural substances that had been known to show the aphrodisiac activity in Africa and Europe (Taur & Patil 2011).