UNIVERSITI TEKNOLOGI MARA

EFFECTS OF ESTROUS CYCLE ON VASCULAR CONTRACTILITY IN THE PRESENCE AND ABSENCE OF ENDOTHELIUM

NURUL HANANNI BINTI ABDUL LATIF

Dissertation submitted in partial fulfillment of the requirements for the Bachelor of Pharmacy (Hons)

Faculty of Pharmacy

November 2009

ACKNOWLEDGEMENT

Praise to the Almighty Allah for His blessings, guidance and love. To Prophet Muhammad, Peace Be Upon Him.

First and foremost, I would like to express my gratitude to my beloved parents for their undeniable support and dedication towards my education. Without their love and care, I would not be here today, being a person that I am.

I would also like to express my absolute thanks to my supervisor, Mr Aloysius Umelo Iguegbe, for his tireless effort to guide me and unwavering patience towards my ignorance. Thank you for the time, energy and continuous advice in the process of completing this paper. Money can't buy such experience I had with you.

My thanks go out to my friends, for their tireless effort, love, time, energy and support that they gave to me all the way until the finish line. No one can match everything you gave to me.

It is hoped that this piece of work will prove a valuable experienced and learning aid for me. I was fortunate enough to work with people who contribute greatly to the success of this research study. Thank you.

TABLE OF CONTENTS

ABSTRACT

The aim of this study was to determine the possible influence of sex hormones on the contractile responses induced by phenylephrine and angiotensin II, in endothelium intact and denuded tissues. For this purpose, thoracic aorta segments from female WKY rats were used. Endothelium denuded aorta exhibited higher sensitivity to phenylephrine and angiotensin II contractility compared to endothelium intact tissues as tissue denudation remove endothelium which inhibit contractile agonist. States of estrous cycle modulated phenylephrine induced contractile responses more in endothelium intact tissues compared to angiotensin II and equally regulated responses for phenyelephrine and angiotensin II in endothelium denuded tissues.

CHAPTER 1

INTRODUCTION

1.1 Background

The endothelium responds to physical and chemical stimuli via the synthesis and/or release of regulatory substances affecting vascular tone and growth, thrombosis and thrombolysis and platelet and leukocyte interactions with the endothelium (Sader & Celermajer, 2002). Vasoconstriction is a condition where there is a decrease in the diameter of the lumen of a blood vessel. Several hormones help regulate blood pressure and blood flow by altering cardiac output, changing systemic vascular resistance, or adjusting the total blood volume. Angiotensin II is a potent vasoconstrictor where it raises blood pressure by increasing systemic vascular resistance. Norepinephrine, epinephrine, antidiuretic hormone are hormones that can cause vasoconstriction. Several types of cells like white blood cells, platelets, endothelial cells and smooth muscle fibers release a wide variety of chemicals that alter blood vessel diameter. Vasoconstrictors release includes thromboxane A_2, superoxide radicals, serotonin and endothelins (Tortora & Derrickson, 2006). α-adrenoreceptor agonist, phenylephrine is more dependent on intracellular calcium to induce contraction by myotropic action (Cadorette *et al.*, 2000).