UNIVERSITI TEKNOLOGI MARA

HISTOLOGICAL CHANGES IN MALE REPRODUCTIVE SYSTEMS OF TIME RESPONSES *BISPHENOL A* TREATED SPRAGUE DAWLEY RATS

BOB ISKANDAR BIN KADIR

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

Faculty of Pharmacy

November 2009

ACKNOWLEDGEMENTS

In the name of Allah S.W.T, the Most Gracious and the Most Merciful. First and foremost all the praise is due to Allah, the Almighty in giving me the opportunity in completing this study. Secondly, I would like to show my thanks to all BPA team lecturers and especially appreciation to my supervisor Ms. Siti Syairah Mohd Mutalip for her guidance and experience although she is very busy due to his many responsibilities in the university, yet she offered me a lot of her valuable time. Without his valuable time, comments and recommendations I could not be able to complete this study. A special thank you note goes to all postgraduate students at Life Sciences Laboratory Shah Alam for their help in providing and sharing me with all necessary information and assistance. There are many other people whose support, encouragement and prayers helped me a lot in finishing this study especially my parents for their great assistance and continuous encouragement.

Finally, I would like to show my gratitude and appreciation for everybody who helped me to complete this work directly or indirectly, thank you.

TABLE OF CONTENTS

ABSTRACT

Bisphenol A (BPA) that is extensively used in food packaging industries is actually an estrogen-mimicking chemical that can bind to androgen receptors and inhibit the action of androgen. According to previous studies, BPA has been shown to have estrogenic activity and therefore, this study was designed to examine the time response effect of BPA on male reproductive system by using SD rats that had been exposed to BPA since juvenile age. BPA of 100mg/kg body weight/ daily was forced-fed to SD rats for three different periods of 7 days, 14 days and 28 days. After each treatment, all the treated rats were sacrificed and the testes were removed and processed for histological analysis. The obtained result showed some histological changes in seminiferous tubules of testes in adult rats, such as loss of luminal space of the seminiferous tubules, accumulation of amorphous material in the tubes, reduction in the number of maturating spermatids and aberrant distribution of spermatogenic cells within the epithelium. In conclusion, the result obtained indicates that exposure or consumption of BPA since juvenile age might has profound effects on the tissue arrangement in testes as well as on the spermatogenesis.

Key Words: Bisphenol A, seminiferous tubules, spermatogenesis, testes, histology

CHAPTER 1

INTRODUCTION

1.1 Introduction

Bisphenol A, which is commonly abbreviated as BPA is an industrial chemical and also is an organic compound with two phenol functional groups. It is prepared by the condensation of acetone with two equivalents of phenol. The reaction is catalyzed by an acid, such as hydrochloric acid or sulfonated polystyrene resin.

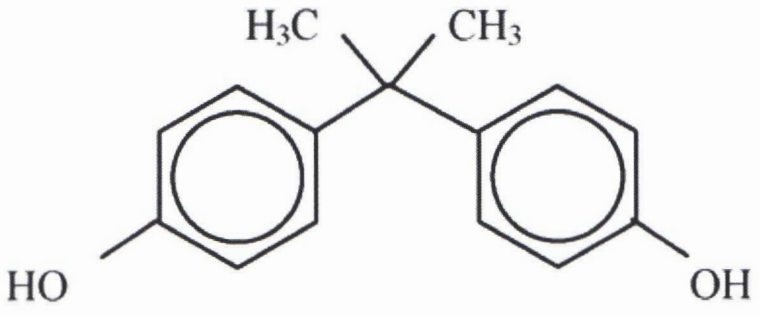

Figure 1.1: Chemical structure of Bisphenol A (BPA)