UNIVERSITI TEKNOLOGI MARA

GLIBENCLAMIDE – *Hibiscus rosa sinensis* LEAVES WATER EXTRACT EFFECTS ON STREPTOZOTOCIN INDUCED DIABETIC RATS

FARAH ADILAH BINTI TAIB

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

FACULTY OF PHARMACY

2014

ACKNOWLEDGEMENT

Alhamdulillah, all praises to Allah for the strengths and His blessing in completing this thesis. Firstly, I would like to express my sincere gratitude to my supervisor, Dr Aida Azlina binti Ali, for the continuous support of my thesis and research, for her patience, motivation, enthusiasm, and knowledge. Her guidance helped me a lot from the beginning of my research project up until its completion.

I would like to thank my co-supervisor, Dr Rozaini binti Mohd Zohdi for taking time out from her busy schedule to serve as my external reader. Not to forget, thanks to the Universiti Teknologi MARA (UiTM) for providing me with the facilities and laboratory to conduct this study. Special thanks to Dr Hafidz and all staff in Laboratory Animal Facility and Management (LAFAM) for all the warm helps and assistance they gave me. Appreciation also goes out to the laboratory staff and master students who assist me a lot during my research project. Their co-operation and support during the laboratory works is greatly appreciated.

I also would like to thank my friends especially my labmate, Nur Shahira binti Rohani who is together with me completing this research until the end and to my family and housemate who had given me support and encouraging me in completing this study. To those who indirectly contributed in this research, your kindness means a lot to me. Thank you very much.

TABLE OF CONTENTS

ABSTRACT

Due to increases in prevalence of diabetes mellitus the numbers of people using complementary and alternative medicine are increasing nowadays. Diabetic patient always searching for other alternative to lower their blood glucose level, this lead them in consuming herbs and plants which is believed having hypoglycemic effect together with medicine prescribe by physician. In this project, we study the effect of drug-herb interaction of glibenclamide and *Hibiscus rosa sinensis* water extract on streptozotocin induced diabetic rats. Blood glucose, body weight, food consumption and pancreas histology were determined in streptozotocin induced diabetic rats using 30 male Wistar rats. The rats were randomly divided into 5 groups of 6 rats each. The rats were induced with diabetes by administering streptozotocin 40mg/kg intraperitoneally. Treatment is given for 28 consecutive days. Oral glucose tolerance test is done as to confirm rats with low blood glucose are diabetic after administration of streptozotocin. There was significance difference between positive control group and the combination treatment group in lowering blood glucose level and increasing body weight while no significance different in food intake. Result of histology study showed prevention of further destructive of pancreatic cell of the combination treatment compared with positive group and thus improve the size, structure and number of β cells. As a conclusion, repeated administration of the glibenclamide (0.5 mg/kg) and extract at an oral dose equivalent to 125 mg/kg, (once daily for 28 consecutive days), can give better hypoglycemic effect compared to treatment of glibenclamide alone. There were also increased in number of β cells of pancreatic Islet of Langerhans observed upon conduction histological study on the pancreas cell.

Keyword : Blood glucose; Leaves extract; *Hibiscus rosa sinensis*; Streptozotocin rats; Diabetes mellitus

CHAPTER 1

INTRODUCTION

1.1 Background

Diabetes mellitus is one of the most common chronic diseases in most part of the world. The disease continues to increase in numbers and significance due to lifestyle changing. The rising trend is due to many factors such as population growth, aging, urbanization and increasing prevalence of obesity and physical inactivity. Based on Diabetes Atlas, the highest regional prevalence for 2010 was for North America and followed by Eastern Mediterranean and Middle-East (EMME) and South Asia. Malaysia is one of the top 10 countries for diabetes prevalence in 2010 and estimated to be the top countries in 2030 (Shaw et al., 2010).

A survey done in 2006 revealed that out of 2180 people in Malaysia with known diabetes, only 93.1% still taking medications at the time of the survey. More urban people (78%) was on modern treatment compared to people who live in the rural areas (75.1%).The percentage of people with known diabetes that choose alternative method either alone or along with modern medication for treating their disease was only 0.6% (Letchuman et al., 2010).