


UNIVERSITI TEKNOLOGI MARA

**TENSILE STRENGTH AND COLLAGEN
CONTENT EVALUATION OF WOUNDED SKIN
OF DIABETIC RATS FOLLOWING TOPICAL
TREATMENT WITH *Hibiscus rosa-sinensis* LEAVES
AQUEOUS-METHANOLIC EXTRACT**

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ABSTRACT

The effects of the aqueous methanol extract of *Hibiscus rosa-sinensis* leaves on tensile strength and collagen content of wounds on diabetic male Wistar rats were investigated. Fifty rats were randomly divided into four groups; (1) normal control; (2) negative control group with no treatment; (3) positive control group with topical silver sulfadiazine treatment; (4) treatment group that received topical treatment of 0.3 ml of 10 mg/kg aqueous methanol (MeOH) extract. Diabetes in the rats was streptozotocin-induced. A 4-cm² wound was created on each rat except for those in the normal control group. The treatment was given daily. A group consisting of five rats from the positive and negative control and the treatment groups were sacrificed on the 3rd, 7th and 14th day of the study. The skin around the wound was taken for collagen content and tensile strength measurement. Our findings showed a significant increase in tensile strength and collagen content in rats treated with topical aqueous methanol extract compared to those treated with silver sulfadiazine and those that received no treatment. As a conclusion, a topical application of aqueous methanol extract of *Hibiscus rosa-sinensis* leaves may improve wound healing in diabetic rats.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Diabetes mellitus is becoming a serious threat to mankind health and one of the major cause of death in the world. The rate of incidence and mortality of this severe health problem will continue to increase tremendously every year. The prevalence of diabetes mellitus is predicted to reach up to 4.4% in the world by 2030 (Patel et al., 2012). There are several factors that contribute to this incident such as lifestyle changes, family history, weight, age, high blood pressure and physical inactivity. Malaysia is among the top countries with an exceptionally high prevalence of physical inactivity which is the highest among all of Western Pacific Region Countries according to the World Health Survey (Chu & Moy, 2014).

Complications arising from diabetes mellitus is becoming a serious public health issues and one of them is impaired wound healing. Babaei et al., (2013) states that 15% of the 200 million diabetic patients worldwide suffer from diabetic wounds that are not easily heal. Healing impairment in patients suffering from diabetes is described by delayed cellular infiltration and granulation tissue formation, decreased