

UNIVERSITI TEKNOLOGI MARA MALAYSIA

**ACUTE AND SUB-ACUTE TOXICITY ASSESSMENT OF
Hibiscus rosa-sinensis L. METHANOL EXTRACT ON SKIN
CELL**

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TABLE OF CONTENTS

	Page
TITLE PAGE	
APPROVAL FORM	
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	v
LIST OF PLATES	v
ABBREVIATIONS	vi
ABSTRACT	vii
 CHAPTER ONE: INTRODUCTION	
1.1 Background of Study	1
1.2 Research Objective	5
1.2.1 General	
1.2.2 Specific	
1.3 Research Hypothesis	5
1.4 Problem Statement	6
1.5 Significance of Study	7
 CHAPTER TWO: LITERATURE REVIEW	
2.1 Toxicity Study	9
2.1.1 Acute Toxicity	10
2.1.2 Sub-acute Toxicity	10
2.2 <i>Hibiscus rosa-sinensis</i>	
2.2.1 Distribution and Features of <i>Hibiscus rosa-sinensis</i>	11
2.2.2 Other Studies on the Uses of <i>Hibiscus rosa-sinensis</i> Extract	14
2.3 Wound Healing	
2.3.1 General Mechanism of Wound Healing	15
2.3.2 <i>Hibiscus rosa-sinensis</i> as a Wound Healing Promoting Agent	17
2.4 Method for Toxicology Assessment	18
2.4.1 In-vitro Toxicity Study	20
 CHAPTER THREE: METHODOLOGY	
3.1 List of Materials and Equipment	22
3.2 Plant Collection	22
3.3 Preparation of Extract	23
3.4 Cell Culture	23
3.5 Plating the Cells	24
3.6 Experimental Design	25
3.7 Acute Toxicity Study	26
3.8 Sub-Acute Toxicity Study	27
3.9 Histological Analysis	
3.9.1 Morphological Alteration Assay	28
3.9.2 Cell Viability Assay	28

ABSTRACT

Hibiscus rosa-sinensis L is known as hibiscus used as an herb in Ayurvedic or alternative medicine in India to treat variety of conditions. Many studies have been done in the past to study the pharmacological potential of such herbs. However, little investigation has been done in potential toxicities assessment of such products. There is now increase in evidence that many herbal medicines cause serious toxicity to their applicants. Two studies were conduct, acute and sub-acute toxicity studies. BJ fibroblast skin cells (CRL 2522) were plated into a 96 wells containing 2 control group and 1 treatment group. Aseptically, positive control were treated with 5% hydrogen peroxide, negative control was treated with the vehicle only. For acute toxicity, 5 wells were treated with 35, 39, 45, 50, 55 mg/ml extract. Plates were incubated (37°C 5% CO₂) for 24 hours. For sub-acute toxicity, and 3 wells were treated with 20, 39, 78 mg/ml extract. Plate were incubated (37°C 5% CO₂) for 4 hours before treatment were replaced with media for 1 hour and repeated 4 times within 24 hours. Morphological assessment was conducted using the light microscope. Viability of the cells were assessed by dilute with tetrazolium salt solution for 4 hours and spectrophotometrically measured. Treated cells with *Hibiscus rosa-sinensis* Linn extract show morphological changes and also reduces the skin cell viability as the concentration of the extract increases compared to the non-treated cells. In conclusion, the extract treatment shows signs of acute and sub-acute toxicity on the BJ fibroblast skin cells at a very high concentration.

Keywords: *Hibiscus rosa-sinensis* Linn extract, fibroblast skin cells, morphological assessment, cell viability

CHAPTER 1

INTRODUCTION

1.1 Background of study

Wounds are included in one of the most widespread injuries in accidents and still remain a worldwide public health issue (Upadhyay et al., 2011). Although many research and advances have been conducted in our understanding and management of wound injuries, there are still a number of wounds healed with scar appearance, resulting in significant aesthetic dysfunction and disfigurement (Gurfinkel et al., 2010). Wound healing process is an orderly process of repair that follows injury to the skin and other soft tissues (Stadelmen et al., 1998; Iba et al., 2004).

Wound healing undergoes in 3 stages in completion which is: inflammation, proliferation, and remodelling. In the inflammatory phase, debris and bacteria are eliminated through a process of phagocytosis and factors or cytokines are released that induce the migration and division of cells involved in the proliferative phase. In the proliferative phase, it is characterized by angiogenesis, collagen deposition, granulation tissue formation, epithelialization, and wound contraction (Midwood et al., 2004).