

**UNIVERSITI TEKNOLOGI MARA**

**ANTIBACTERIAL EFFECT OF FLAVONOIDS AND  
DIETHYL ACETATE EXTRACT FROM THE LEAVES OF**

***HIBISCUS ROSA-SINENSIS***

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## ABSTRACT

The purpose of this study was to investigate the antibacterial activity of flavonoid compound and diethyl acetate extract from *Hibiscus rosa-sinensis* leaves. The antibacterial activity was evaluated using broth microdilution assay. The extract was provided by Prof Dr Teh Lay Kek, lecturer of Faculty of Pharmacy, UiTM Puncak Alam. The flavonoids selected for this study were tannic acid, gallic acid, ellagic acid, diosmetin and acacetin. Among the flavonoid compounds used, tannic acid had the widest spectrum of activities while diosmin and acacetin had the lowest spectrum of activity. The gram positive bacteria used were *Streptococcus agalactiae*, *Staphylococcus aureus*, *Straptococcus pyogenes*, and Methicillin-resistant *Staphylococcus aureus* (MRSA). The gram negative bacteria used were *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia*, and *Shigella spp*. This study showed that flavonoid compound and diethyl acetate extract from *Hibiscus rosa-sinensis* had antibacterial activity against selected bacteria.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

Plants have been used as source of medicines for centuries. Ancient Egyptian at 1000 B.C was known to apply various herbs as medication, while Ancient Chinese during Han and Tang Dynasty compiled their own herbal book. Over 50% of all modern clinical drugs are of natural product origin and natural products play an important role in drug development programs in the pharmaceutical industry (Ruban & Gajalakshmi, 2012). Traditional medicine are still in practice until today mainly because the herbal remedies are known exhibiting anti-bacterial, anti-inflammatory, cytostatic, anti-fungal and anti-viral activities (Seyyednejad, Koochak, Darabpour, & Motamedi, 2010). In addition, the supply of natural plant is easy and affordable compared to modern medicines.

Bacteria are prokaryotic microorganism known not having true nucleus with wide range of shapes. Bacteria are divided into three groups based on their responses to oxygen which is aerobic, anaerobic and facultative. They also can be classified by their composition of the cell wall. Gram-positive bacteria have a thick cell wall containing many layers of peptidoglycan and teichoic acids, whereas Gram-negative bacteria have a thin cell wall consist of a few layers of peptidoglycan surrounded by a second lipid membrane containing lipopolysaccharides and lipoproteins. Dr. Hans Christian Gram, a Danish physician, has invented a staining process called “Gram stain” to distinguish the bacteria apart.