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ANTIBACTERIAL ACTIVITY OF FLAVONOIDS AND PETROLEUM ETHER EXTRACT OF *HIBISCUS ROSA-SINENSIS* LEAVES

AISYAH AMANINA BINTI ABDULLAH SALIM

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ABSTRACT

The study was done to determine the antibacterial effect of flavonoids and petroleum ether extract of *Hibiscus rosa-sinensis* leaves in *Staphylococcus aureus* (*S. aureus*), methicillin-resistant *Staphylococcus aureus* (MRSA), *Streptococcus agalactiae* (*S. agalactiae*), *Streptococcus pyogenes* (*S. pyogenes*), *Pseudomonas aeruginosa* (*P. aeruginosa*), *Escherichia coli* (*E. coli*), *Klebsiella pneumonia* (*K. pneumonia*) and *Shigella* spp. Evaluation of antibacterial activity was carried out using broth microdilution assay. MTT assay was used to determine the minimum inhibitory concentration (MIC). The results showed the MIC values of rutin were 10 mg/ml against *S. aureus* and *K. pneumonia* and 1mg/ml against *S. agalactiae* and *S. pyogenes*. The MIC values of naringenin were 1 mg/ml and 0.05 mg/ml against *S. agalactiae* and *S. pyogenes* respectively. The MIC value of kaempferol, taxifolin and myrecitin against *S. pyogenes* was 0.05 mg/ml. The MIC value of petroleum ether extract of *Hibiscus rosa-sinensis* leaves against *S. aureus* was 5 mg/ml. There were no MIC values determined in MRSA, *P. aeruginosa, E. coli* and *Shigella* spp in both of flavonoids and petroleum ether extract of *Hibiscus rosa-sinensis* leaves. This study showed positive effect of flavonoids; rutin, naringenin, kaempferol, taxifolin and myricetin and petroleum ether extract of *Hibiscus rosa-sinensis* leaves as antibacterial properties.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Nature has been the source of medicine since thousands years ago. Apparently, the secondary metabolites which serve as defense agents against invading microorganisms (Arullappan, Zakaria, & Basri, 2009) have been recognized as contributing to the antimicrobial property of plant extract (R. Nair, Sumitra Chanda, & T.Kalariya, 2005). As a result over 50% of all modern clinical drugs are of natural product origin (R. Nair *et al.*, 2005). Generally, practice in oriental medicine utilizes a number of plants. The mixture of several crude extracts increases the medicinal effects through synergistic amplification and diminishes any possible adverse effects (Mishra, Tandon, & Munjal, 2009). Therefore, the concept of a whole or partially purified extract of a plant gives advantage over a single isolated ingredient (Mishra *et al.*, 2009). Currently, studies on the biological activity of plants are increasing due to the awareness of adverse effects exhibited by synthetic pharmaceutical products (R. Nair *et al.*, 2005). Such studies contribute to the pharmacological basis of medicinal plants.