



EVALUATION OF HEXANE EXTRACT OF *Parkia speciosa* Hassk. PERICARP AS A POTENTIAL ANTIMICROBIAL AGENT

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ABSTRACT

Evaluation of Hexane Extract of *Parkia speciosa* Hassk. pericarp as a Potential Antimicrobial Agent

Parkia speciosa Hassk. or locally named as “Petai” in Malaysia, belongs to the family Fabaceae. It is known to have many medicinal benefits. In the present study, the discarded pericarp of *Parkia speciosa* was extracted with n-hexane solvent for assessment on its antimicrobial activities. Antimicrobial susceptibility testing (AST) of the *Parkia speciosa* extract was done using five concentrations of hexane extract by using the disc diffusion method on *S. aureus*, *B. cereus*, *E. coli*, and *S. thyphimurium*. The zone of inhibition for AST was only shown for gram positive bacteria which were *S. aureus* and *B. cereus* whereas for gram negative bacteria (*E. coli* and *S. thyphimurium*) showed no zone of inhibition. The minimal inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of *Parkia speciosa* pericarp hexane extract were also determined by micro-titer method against the four tested bacteria. The MIC result for *S. aureus* and *B. cereus* at three concentrations of hexane extract which were 1000 mg/ml, 500 mg/ml and 250 mg/ml showed that no turbidity was seen. MBC result of the three concentrations of extract also showed that there was no growth the Muller Hinton agar. In conclusion, even though the hexane extract of *Parkia speciosa* pericarp showed antimicrobial activity towards *S. aureus* and *B. cereus*, it may not be a good candidate as a potential antimicrobial agent due to the limitations during the preparation of the extract.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Historically, many legumes have been practically applied for the treatment of many diseases. One of it is *Parkia speciosa* Hassk. also known as “stink bean “or “petai”. *P. speciosa* Hassk. is a Southeast Asian legume of the Fabaceae family. It grows wildly in the lowland tropical forests and often cultivated in Malay villages (H. L. Siow *et al*, 2013). The pericarps of *P. speciosa* are simply discarded while the seeds are commonly consumed as food. Currently, agricultural waste are commonly used as feeds, fertilizers and landfills but unfortunately, the waste of *P. speciosa* have not received any interest to be recycled (C. Y. Gan *et al*, 2010).

The local residents in Asian believed that *P. speciosa* possess several medical properties. It also has been reported to exhibit hypoglycemic, antibacterial, anticancer, and antioxidant activities (Yusof Kamisah *et al*, 2013). In Indonesian traditional culture, the pods of *P. speciosa* had been used as an anti-inflammation agent for mosquito bite (Faridah *et al*, 2015). This study will focus on the antimicrobial activity of *P. speciosa* pericarp and its potential as a new natural antimicrobial agent. Antibacterial agent is an agent that can kill or inhibit the growth of microorganisms. According to Yusof Kamsiah *et al*. (2013), the studies on the antimicrobial properties of *P. speciosa* are limited, and currently only the seeds of *P. speciosa* have been screened for its antimicrobial activity. Therefore, in the present study, the hexane extract from *P. speciosa* pericarp was studied to determine its effectiveness to inhibit bacterial growth by using agar-well diffusion method.