



**QUALITATIVE PHYTOCHEMICAL ANALYSIS AND ANTIMICROBIAL
ACTIVITY OF *Piper sarmentosum* LEAVES EXTRACT AGAINST WOUND
PATHOGENS**

By

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ABSTRACT

Piper sarmentosum also known as “Daun Kaduk” is one of the plants that are used as a traditional medicine that usually can be found in the tropical and subtropical region of the world. Local people also used this plant to cure skin disease, rheumatism, diarrhea, fever and headache. Previous studies showed that *Piper sarmentosum* extract can act as antimicrobial agents. Bioactive constituents in antiseptic are reported to be cytotoxic to human cell. Thus, it is important to search for new types of highly effective and non-toxic antimicrobial agents from natural sources. The aim of this study is to investigate the phytochemical compounds and antimicrobial activity of *Piper sarmentosum* leaves extract against wound pathogens. In order to determine the antimicrobial activity of *Piper sarmentosum* extract against wound pathogens, antimicrobial susceptibility testing (AST) by disc diffusion method and minimum inhibitory concentration (MIC) by using microdilution broth method was performed. The phytochemical compounds were screened using standardized methods and the results were interpreted based on precipitation and color changes of the chemical reagents. The present study demonstrated the antimicrobial activity of methanolic extract of *Piper sarmentosum* leaves. The result showed that antimicrobial activity was observed against *S.aureus* (7mm), while the extract showed little effect against *E.coli* (6.5mm). There is no zone of inhibition against *P.aeruginosa*. The result for MIC value showed the minimum concentration of *Piper sarmentosum* extract to inhibit the *S.aureus* and *E.coli* (6.25mg/ml and 12.5mg/ml). In addition, the phytochemical screening result showed that glycosides, flavonoids, terpenoids, alkaloids, and phenolics were present in the methanolic extract. In conclusion, methanolic extract of *Piper sarmentosum* could be a possible source to obtain new and effective herbal medicines to treat wound infections caused by multi-drug resistant strains of microorganisms from community as well as hospital settings.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Plants are used as a medicine to treat disease for many years ago without any scientifically proven. This practice has been passed on from generation to the next generation until now and this practice has demonstrated the efficacy and safety of using plants as medicine (WHO, 2000). Many researchers reported the presence of phytochemical in the plant play an important roles as antimicrobial, antioxidant, anti-inflammatory and anticancer (Hisham *et al.*, 2009). Malaysia is one of the Asian countries blessed with many potential plants of medicinal benefit such as *Molineria latifolia* (lemba), *Abutilon indicium* (kembang lubuk), *Melastoma malabathricum* (senduduk), *Piper betle* (sireh) and *Dioscorea daemona* (ubi gadong) (Napisah *et al.*, 2011).

Piper sarmentosum also known as “Daun Kaduk” is one of the plants that are used as a traditional medicine. It belongs to the family of *piperaceae* (Hisham *et al.*, 2009) and usually can be found in the tropical and subtropical region of the world (Ugusman *et al.*, 2012). Normally local people eat it as “ulam” and this plant also popular in Thailand and they called it as “cha-plu” (Ridtitid *et al.*, 1998). *Piper sarmentosum* is a creeping terrestrial herb about 20 cm tall (Rukachaisirikul *et al.*, 2004). The leaves are like heart shape in green color and the size is about 5-10 cm wide with 7-15 long. The flower is like unisexual ovary and the fruit looks like obovoid berry (Peungvicha *et al.*, 1998). All the different parts of this plant has its own potential benefits especially its leaves and roots. *Piper sarmentosum* usually used as carminative and expectorant. It also can be used as a treatment to relieve muscle pain (Pongboonrod, 1976).