# INVESTIGATION OF PHYTOCONSTITUENTS AND ANTIMICROBIAL EVALUATION OF *Acacia mangium* LEAVES EXTRACT

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## ABSTRACT

## INVESTIGATION OF PHYTOCONSTITUENTS AND ANTIMICROBIAL EVALUATION OF *Acacia mangium* LEAVES EXTRACT

*Acacia mangium* is one of the most abundant plant in Malaysia since its introduction as a main source of wood and pulp for the wood industry. With the increasing trend of multi-drug resistance microbes and increasing cost for a mean to fight these microbes, a highly available and sustainable source of antimicrobial agent is required. This study focuses on determining the potential of *Acacia mangium* leaves as a source of antimicrobial agent by achieving several objectives including detecting the phytoconstituents of leaves extract, antimicrobial assay against gram-negative bacteria, gram-positive bacteria and a fungus and followed by determination of minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) against tested organisms. The methods used were extraction of *Acacia mangium* leaves in 50% methanol and 50% acetone followed by phytochemical screening to detect the presence of compounds that has a potential as antimicrobial agents, disc diffusion assay of both solvents leaves extract and the determination of MIC and MBC. The results presented that 50% methanol and 50% acetone leaves extract showed the presence of phenol, tannins, flavonoids, terpenoids and alkaloids while reducing sugar was absence in both solvent leaves extract. Saponin were only detected in 50% methanol leaves extract while protein and quinones were only detected in 50% acetone leaves extract. The antimicrobial activity of both solvent plant leaves extract were further evaluated against gram-negative bacteria, gram-positive bacteria and a fungus that showed only *Acacia mangium* 50% acetone leaves extract exhibit moderate antimicrobial activity against *S. aureus* at 12.33 ± 1.15 mm while both solvents extract showed no antifungal activity against *C. albicans*. Antibacterial activity against *S. aureus, E. coli* and *P. aeruginosa* is considered as weak. The MIC and MBC for 50% methanol leaves extract against *S., E. coli* and *P. aeruginosa* was determined to be 15,630 µg/ml, 7,810 µg/ml and 31,250 µg/ml respectively. For 50% acetone extract, the MIC and MBC for *S. aureus, E. coli* and *P. aeruginosa* was determined to be 3,900 µg/ml, 3,900 µg/ml and 15,630 µg/ml respectively while for *S. agalactiae* the MIC and MBC was 62,500 µg/ml and 125,000 µg/ml respectively. *Acacia mangium* 50% methanol and 50% acetone leaves extract shown no antifungal activity against a weak fungus *C. albicans* and showed an overall weak antibacterial activity against gram-negative and gram-positive bacteria. Recommendation for future research of *Acacia mangium* would be to diversify solvent used for extraction, antibiotic disc against test organisms and quantification assay of secondary metabolites detected in the extract.