



ANTIMICROBIAL ACTIVITY OF FRACTIONS OF CEREMAI (*Phyllanthus acidus* (L.) Skeels) LEAVES EXTRACT AGAINST ANTIMICROBIAL RESISTANT BACTERIA

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ABSTRACT

Background: Increasing antimicrobial resistance and toxicity led to the use of herbal medicine as an alternative treatment of various diseases associated with microbes. Ethanol extract of ceremai (*Phyllanthus acidus* (L.) Skeels) leaves had antimicrobial activity against *Candida albicans*, *Escherichia coli*, and *Staphylococcus aureus* (Jagessar, 2008).

Objective: This research tested the antimicrobial activity of the ceremai leaves extract fractions against bacteria resistant to [Methicillin-Resistant *Staphylococcus aureus* (MRSA), Methicillin-Resistant Coagulase Negative *Staphylococci* (MRCNS), Vancomycin Resistant *Enterococcus* (VRE)] and test fungi (*Candida albicans*, *Microsporum gypseum*, and *Aspergillus niger*) through the determination of minimum inhibitory concentration (MIC) and the equivalence to reference antimicrobials.

Methods: Crude drug was extracted by maceration using 96% ethanol. Extracts were fractionated by liquid-liquid extraction using solvents n-hexane, ethyl acetate, and water. Determination of MIC of the ethanol extract and fractions against test bacteria and fungi were performed using agar diffusion method, then followed by determination equivalence of the most potent fractions to reference antimicrobials (tetracycline, ketoconazole).

Outcome measured : MIC and equivalence of the most potent fractions to reference antimicrobials (tetracycline, ketoconazole)

Results : MIC value of ethanol extract of ceremai leaves against VRE, MRCNS, *Candida albicans* was 1%, 0.75%, and 0.05% respectively. MIC values of ethyl acetate fraction against MRSA, VRE, MRCNS were 5%, 2.5%, and 0.63% respectively. MIC values of the most potent ethyl acetate fraction of the ceremai leaves against *Aspergillus niger*, *Candida albicans*, and *Microsporum gypseum* were 5%, 0.08%, and 2.5% respectively. Activity of 1 mg of ethyl acetate fraction was equivalent to 0.05 µg, 0.36 µg, and 0.92 µg of tetracycline respectively against MRSA, VRE, and MRCNS. Activity of 1 mg of ethyl acetate fraction of ceremai leaves was equivalent to 0.32 µg, 0.01 µg, and 0.03 µg ketoconazole respectively against *Aspergillus niger*, *Candida albicans*, and *Microsporum gypseum*.

Conclusion: In conclusion, the ceremai leaves extract had activity against VRE, MRCNS, *Candida albicans*. The ethyl acetate fraction had the most potent antimicrobial activity against MRSA, VRE, MRCNS, *Aspergillus niger*, *Candida albicans*, and *Microsporum gypseum*.

Keywords: antimicrobial, *Phyllanthus acidus* (ceremai leaves), ethyl acetate fraction