

ABSTRACT

THE EFFECTIVENESS OF ESSENTIAL OIL OF RED GINGER (*Zingiber officinale* Roscoe) AS AN ANTIBACTERIAL AGENT AGAINST *Streptococcus pyogenes*

Introduction : *Streptococcus pyogenes* (Grup A Streptococcus) is one of the major pathogens causing from mild to severe infection. Antibiotic is a main therapy of *Streptococcus* infection. The patient's disobedience in the treatment series will results in inadequate medical treatments and potent to increase of the post streptococcal infection sequelae. Red Ginger (*Zingiber officinale* Roscoe) is known to contain monoterpenoid compounds (eg linalool) that have antibacterial properties. This research was conducted to investigate the antimicrobial activity of essential oil of red ginger against *Streptococcus pyogenes*.

Method : This research was a true experimental with post-test controlled group design and was done in the laboratory of microbiology. Rhizome of red ginger was destilated using steam distillation method and the growth of *Streptococcus pyogenes* was measured using the dilution method to determine the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC). The extract concentration used in this research were 4,8%, 2,4%, 1,2%, 0,6%, 0,3%, 0,15%, 0,075 %, 0,0375%, 0,01875%, 0,009375%, and 0,0046875%. This experiment was replicated three times. MIC was observed by the significant alterations of solution's turbidity after incubation at 37°C for 24 hours. All those solutions then cultured on blood agar plate at 37°C for 24 hours and observed visually by noticing the growth of bacterial colonies.

Results : MIC could not be determined due to no significant alterations in turbidity. Cultures on blood agar plate shows mean or average of MBC was 0,7%.

Conclusion : In summary, essential oil of red ginger has antimicrobial effect against *Streptococcus pyogenes*.

Keywords : essential oil of red ginger (*Zingiber officinale* Roscoe), antimicrobial activity, dilution susceptibility test, *Streptococcus pyogenes*