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