ABSTRACT

Valencia, Janice. 2015. **The Effects of Lime *(Citrus aurantifolia)* Ethanol Extract as Antimicrobial Against *Escherichia coli* by *in vitro*.** Final Assignment, Medical Program, Faculty of Medicine, University of Brawijaya. Supervisors: (1) Prof. Dr. dr. Noorhamdani AS, DMM, Sp.MK. (2) dr. Soemardini, MPd

Escherichia coli is the second-most common bacteria causing nosocomial infection. Besides, *Escherichia coli* is also known as the most common pathogen bacteria which causes diarrhea in children as well as in adults. Nowadays, the use of antibiotics for therapeutic measures against *Escherichia coli* has created a certain degree of resistance in the bacteria. Therefore, further studies are needed to find a viable solution for this problem and to create a solution using herbal substances as an alternative therapeutical approach to reduce the level of resistance. One of the most popular herbal substance which has antimicrobial effects and can be used in this case is the lime *(Citrus aurantifolia).* The nutrients contained in the lime which reacts as antimicrobial agents are tannin, fenolic acid, limonene, saponin, flavonoid and alkaloid. The purpose of this study is to discover the potential effects of the bitter melon fruit *(Citrus aurantifolia)* ethanol extract against *Escherichia coli.* This study is an experimental laboratorical research using post test only control group design, carried out through the tube dilution method and striking on NAP. Concentrations of the ethanol extract used are 75%, 80%, 85%, 90%, 95% and 100%, each done in four repetitions. One Way ANOVA test results showed statistically significant difference in changes in the concentrations of lime *(Citrus aurantifolia)* ethanol extraction towards the growth of *Escherichia coli* ($p<0.05$). Spearman correlation test showed a close relationship between the concentration of the extract with bacterial growth (correlation, $r = -0.745$, $p<0.05$). The conclusion of the research is that ethanol extract of lime *(Citrus aurantifolia)* has significant effects as an antimicrobial agent against *Escherichia coli* with the level of Minimum Inhibitory Concentration (MIC) of 75% and Minimum Bactericidal Concentration (MBC) of 100%.

Keywords : ethanol extract, bitter melon fruit *(Momordica charantia)*, antimicrobial, *Escherichia coli.*