ABSTRAK

Penelitian ini bertujuan untuk mengetahui potensi *Clove Leaf Essential Oil* (CLEO) sebagai larutan *teat dipping* berdasarkan aktivitas antimikroba terhadap bakteri utama penyebab mastitis, yaitu *Staphylococcus aureus* dan *Escherichia coli*. Penelitian dilakukan melalui uji zona hambat dengan metode *Disk Diffusion* dan Konsentrasi Hambat Minimal (KHM) dengan metode *Broth Microdilution*. Penelitian menggunakan kultur bakteri *Staphylococcus aureus* ATCC 6538 dan *Escherichia coli* ATCC 25922. Rancangan percobaan uji zona hambat menggunakan Rancangan Acak Lengkap (RAL) dengan enam perlakuan dan tiga ulangan, menghasilkan total 18 unit percobaan untuk masing-masing bakteri. Perlakuan meliputi Kontrol (povidone iodine 10%), P0 (tween 80 5%), P1 (CLEO 2,5%), P2 (CLEO 5%), P3 (CLEO 7,5%), P4 (CLEO 10). Uji *Mann Whitney* untuk membandingkan antara Konsentrasi Hambat Minimal (KHM) CLEO dan povidone iodine dengan masing-masing tiga ulangan terhadap *Staphylococcus aureus* ATCC 6538 dan *Escherichia coli* ATCC 25922. Hasil Anova menunjukkan bahwa perlakuan berpengaruh sangat nyata ($P<0,01$) terhadap zona hambat *Staphylococcus aureus* ATCC 6538 dan *Escherichia coli* ATCC 25922. P4 (CLEO 10%) merupakan perlakuan terbaik yang berbeda nyata ($P<0,05$) dengan Kontrol (povidone iodine 10%) terhadap *Staphylococcus aureus* ATCC 6538 dan tidak berbeda nyata ($P>0,05$) dengan Kontrol (povidone iodine 10%) terhadap *Escherichia coli* ATCC 25922. Konsentrasi Hambat Minimal (KHM) CLEO didapatkan pada angka 0,31%, sedangkan povidone iodine pada 2,5% terhadap *Staphylococcus aureus* ATCC 6538 dan *Escherichia coli* ATCC 25922. Hasil Uji *Mann Whitney* menunjukkan bahwa CLEO memiliki nilai KHM lebih rendah ($P<0,05$) dibandingkan povidone iodine terhadap *Staphylococcus aureus* ATCC 6538 dan *Escherichia coli* ATCC 25922.

Kata Kunci : *Clove Leaf Essential Oil, Staphylococcus aureus, Escherichia coli,* zona hambat, Konsentrasi Hambat Minimal

ABSTRACT

This study aimed to determine the potential of Clove Leaf Essential Oil (CLEO) as a teat dipping solution based on its antimicrobial activity against the main bacteria causing mastitis, namely *Staphylococcus aureus* and *Escherichia coli*. The research was conducted using an inhibition zone test with the Disk Diffusion method and Minimum Inhibitory Concentration (MIC) test with the Broth Microdilution method. The bacterial cultures used were *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922. The inhibition zone test employed a Completely Randomized Design (CRD) with six treatments and three replications, resulting in a total of 18 experimental units for each bacterium. The treatments included Control (povidone iodine 10%), P0 (Tween 80 5%), P1 (CLEO 2,5%), P2 (CLEO 5%), P3 (CLEO 7,5%), and P4 (CLEO 10%). The Mann Whitney test was used to compare the Minimum Inhibitory Concentration (MIC) values of CLEO and povidone iodine, each with three replications, against *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922. Anova results showed that treatments had a highly significant effect (P<0,01) on the inhibition zones of both *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922. P4 (CLEO 10%) was the best treatment, showing a significant difference (P<0,05) compared to the Control (povidone iodine 10%) against *Staphylococcus aureus* ATCC 6538, and no significant difference (P>0,05) compared to the Control against *Escherichia coli* ATCC 25922. The Minimum Inhibitory Concentration (MIC) of CLEO was found to be 0,31%, while povidone iodine was 2,5% against both *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922. The MannWhitney test results indicated that CLEO had a significantly lower Minimum Inhibitory Concentration (MIC) value (P<0,05) than povidone iodine against both *Staphylococcus aureus* ATCC 6538 and *Escherichia coli* ATCC 25922.

Keywords: Clove Leaf Essential Oil, *Staphylococcus aureus*, *Escherichia coli*, inhibition zone, Minimum Inhibitory Concentration