

Janjira Tohkwankaew 2010: Antibacterial Activity and Cytotoxicity of Lemon Grass
Cymbopogon citratus Stapf. Extract. Master of Science (Agriculture), Major Field:
Animal Science, Department of Animal Science. Thesis Advisor: Assistant Professor
Jamroen Thiengtham, Ph.D. 75 pages.

The objectives of this research was studies in the use of lemon grass *Cymbopogon citratus* Stapf. essential oils and Crude Extract as antibacterial agent causing bovine uterine infection *in vitro*. Percent yields of the lemon grass, with the water extracted and freeze dried method and water distilled with condenser method were 17.71 and 4.38 percent. The comparative antimicrobial activity test between essential oil and crude extract from lemongrass (*Cymbopogon citratus*) against *A. pyogenes*, *E. coli* and *S. aureus* as potential causes of bovine uterine infection using Micro dilution method was conducted. The result shows lower concentration of essential oil than crude extract at an effective concentration to inhibit those 3 microbes (1.5625 µg/ml against *A. pyogenes* and *E. coli* and 0.7813 µg/ml against *S. aureus* for essential oil; vs 62.5 µg/ml against *A. pyogenes* and *S. aureu* and 125 µg/ml against *E. coli* for crude extract).The cytotoxicity test on bovine lymphocyte was done by Trypan blue dye exclusion assay. The results found that the mortality rates of lymphocyte cells in each concentrations (0.1, 1, 10 and 100 µl/ml) of oil in the same period were significantly different ($p < 0.05$). The linear regression equations at 12, 24, 48, 72 hours indicate IC_{50} values as 16.77, 9.87, 1.68 and 1.63 µl/ml for each above concentrations respectively. The MTT reduction assay found that the mortality rates of lymphocyte cells in each concentrations (0.1, 1, 10 and 100 µl/ml) of oil in the same period were significantly different ($p < 0.05$). The linear regression equations at 12, 24, 48, 72 hours indicate IC_{50} values as 44.24, 11.94, 1.99 and 1.13 µl/ml for each above concentrations respectively. The antimicrobial activity test and the cytotoxicity test on bovine lymphocyte results can be used to find the appropriate concentrations of essential oil from lemongrass that can be used as non-toxic to lymphocyte with an antibacterial property against microbes causing uterine infection in cattle.

Student's signature

Thesis Advisor's signature