

Thitikorn Duangupama 2009: Use of Lemon Grass (*Cymbopogon citratus* Stapf.) Extracts as Antibacterial Agent in Dairy Cows Uterine Infection *in vitro*. Master of Science (Agriculture), Major Field: Animal Science, Department of Animal Science. Thesis Advisor: Assistant Professor Jamroen Thiengtham, Ph.D. 127 pages.

Dairy cattle uterine infection is common reproductive disease affecting an economic return relating to reduced fertility and milk yield. Medicinal plants have been the topic of many studies aiming at antimicrobial property of these plants. This experiment uses lemon grass as a very interesting crude extract from plant to test against bacterial agent causing bovine uterine infection *in vitro*. The lemon grass crude extract was obtained using absolute ethanol, 75% ethanol, commercial 40% ethanol and distilled water as solvent. The crude extract yield contained 9.44, 20.20, 24.67 and 12.20% of dry weight, respectively. In screening test, antibacterial properties of crude extract from each solvent were tested against *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 6538P, *Bacillus subtilis* ATCC 6633, *Salmonella typhimurium* ATCC 16809, *Pseudomonas aeruginosa* ATCC 27853 and *Arcanobacterium pyogenes* ATCC 8104 by agar disc diffusion. Lemon grass crude extract, using distilled water as solvent, shows antibacterial properties against all 6 microorganisms tested at 500 mg/ml. Minimal Inhibitory Concentration (MIC) and Minimal Bactericidal Concentration (MBC) methods of all extracted samples were conducted using broth dilution. The results showed that distilled water extracted obtained the highest antibacterial activities in MIC using macrobroth dilution of 9.28, 18.56, 18.56, 9.28, 37.13 and 74.25 mg/ml, respectively and in MIC using microbroth dilution of 37.13 mg/ml. For the MBC in macrobroth dilution was greater than 148.50 mg/ml (except *A. pyogenes* at 148.50 mg/ml) and MBC in microbroth dilution was greater than 297.00 mg/ml (except *A. pyogenes* at 74.25 mg/ml). The results from cytotoxic test using brine shrimp lethality assay (Lethal Concentration 50; LC₅₀) at 6, 12, 24 and 48 h indicating that the concentrations of lemon grass extracted using distilled water as solvent were 1.82, 1.55, 1.38 and 1.20 mg/ml, respectively. In conclusion, it is expected that lemon grass crude extracted by water would be used at 37.13 mg/ml as an antibacterial agent in case of uterine infection treatment. Future *in vivo* study involving frequent bovine uterine flushing in case of a preventive measure under farm conditions, possibly using only small amount of crude extract to avoid any cell damage, is highly required.

Student's signature

Thesis Advisor's signature

