UNIVERSITI TEKNOLOGI MARA

COMPARATIVE STUDY OF COMMERCIAL HOSPITAL DISINFECTANT (DETTOL) & ETHANOLIC EXTRACTION OF *Lawsonia inermis* AS SURFACE DISINFECTANT

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DECLARATION

I am here to declare that this thesis is my original work and has not been submitted previously or currently for any other degree at UiTM or any other institution.

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ABSTRACT

COMPARATIVE STUDY OF COMMERCIAL HOSPITAL DISINFECTANT (DETTOL) AND ETHANOLIC EXTRACTION OF *Lawsonia inermis* AS SURFACE DISINFECTANT

Surface disinfectants are an important to control the widespread of pathogens within clinical laboratory facilities, these products must have an appropriate spectrum of antimicrobial activity. However, many other factors must also be considered including the effect on human health and environmental safety. This experimental study was conducted to compare the effectiveness of the antimicrobial action between *L. inermis* ethanolic extraction with Dettol and also to determine the efficacy of *L. inermis* ethanolic extraction against common nosocomial pathogen, which is *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa* and *Escherichia coli*. In brief, 25 g of *L. inermis* powder was soaked into 250 ml of 95% ethanol for three days with frequent agitation. Then, the mix was undergoing two times of filtration. Firstly, the extract was filtered by using sterile filter cloth, then followed by filtering the extract with No 1 Whatman filter. Next, to get crude, the filtrates proceed with the evaporation step by using a rotary evaporator. Ethanolic extract of *L. inermis* and Dettol in different concentrations were prepared and agar diffusion method test was performed. According to the findings of the antibacterial assay, ethanolic extract of the *L. inermis* and Dettol showed antimicrobial activity against *S.aureus* starting from 1.56 to 100% concentration with mean zone of inhibition of 14 to 26.5 and 14 to 28 mm respectively. As for *S. epidermidis*, *L. inermis* extract showed better inhibitory activity from 0.78 to 100% with mean of inhibition between 11 to 33 mm while 1.56% (15 to 35 mm) for Dettol. For Gram negative organisms, *L. inermis* extract show inhibitory activity ranging from 25 to 100% with mean zone of inhibition of 13.5 to 19.5 mm while Dettol need 100% concentration to be effective against *P. aeruginosa* with 11 mm mean of inhibition, whereas for *E .coli*, Dettol react effectively starting from 1.56% concentration with 10.5 to 24.5 mm in diameter compared to *L. inermis* extract that effective at 50% concentration with mean zone of inhibition of 14.5 to 18 mm. By using Independent sample t-test, with *p*-value more than 0.05, the results show no significant difference of *L. inermis* and Dettol in inhibiting the growth of tested organisms. Then, the One-Way ANNOVA test shows there is a significant difference somehow among the mean zone of inhibition of *L. inermis* on the four tested organisms, (p = 0.03). Based on the present finding, *L. inermis* extract might be a good candidate in the search for a natural disinfectant as a substitute to commercial disinfectant.

Keywords: *Lawsonia inermis, Dettol, surface disinfectant test, agar diffusion method.*