COMPARATIVE STUDY OF COMMERCIAL HOSPITAL DISINFECTANT (DETTOL) AND ETHANOLIC EXTRACT OF ROSELLE (*Hibiscus sabdariffa*) CALYX AS SURFACE DISINFECTANT

By

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DECLARATION

I hereby declare that this thesis is my original work and was carried out in accordance with the regulations of Universiti Teknologi MARA and has not been submitted previously or currently for any other degree at UiTM or any other institutions

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TABLE OF CONTENT

ABSTRACT

Hibiscus sabdariffa is a plant belonging to the family of *Malvaceae* and commonly known as Roselle or Karkade. Its fleshy calyces (sepals) are appreciated for their use in production of beverages, juices, jams and syrup in food industry. Previous study reported that *H. sabdariffa* has the ability as antimicrobial agent to inhibit the growth of microorganisms. In this research, Dettol was chosen as commercial surface disinfectant because it is commonly used in healthcare setting. Chloroxylenol is one of the active ingredients found in Dettol which able to gives skin irritation, excessive hair growth and burning. Therefore, many studies were done to find alternative sources of disinfectant that were safe and effective. This study was undertaken to determine the antimicrobial activity of *H. sabdariffa* calyx extract against microorganisms that are commonly found in hospital settings. The calyx powder of *H. sabdariffa* was extracted with 95% ethanol. Then, the ethanol extracts was concentrated using rotary evaporator. The crude ethanol extract of *H. sabdariffa* and Dettol were evaluated for effectiveness as surface disinfectant against four pathogenic bacteria which are *Staphylococcus aureus* (ATCC 33591), *Staphylococcus epidermidis* (ATCC 12228), *Pseudomonas aeruginosa* (ATCC 10145) and *Escherichia coli (*ATCC 25922) by agar well diffusion method. Commercially available 30 µg tetracycline, 30 µg vancomycin, 10 µg streptomycin and 10 µg gentamycin disk were used as positive control for different organisms while Dimethyl Sulfoxide (DMSO) was used as negative control. The result showed that *H. sabdariffa* had antimicrobial activity against *S. aureus, S.epidermidis, P.aeruginosa* and *E. coli* but with different effectiveness at different concentration. As for Dettol, it showed antimicrobial effect against 3 out of 4 tested organisms which are *S. aureus, S. epidermidis,* and *E.coli.* Findings in this study also showed that *H.sabdariffa* calyx and Dettol had no significance difference in inhibiting most of the microorganism which are *S. aureus, S. epidermidis* and *E. coli* (p-value>0.05) but both had significant difference in effectiveness as surface disinfectant against *P. aeruginosa* (p-value<0.05). As a conclusion, this study proved that *H. sabdariffa* had antimicrobial activity against selected Gram positive and Gram negative bacteria which highlight the potentiality of this plant as a source of natural surface disinfectant.

Keywords: *Hibiscus sabdariffa*, Roselle calyx, Commercial Hospital Disinfectant, Dettol, Surface disinfectant