

**APPLICATION OF MINT OIL AS AN ANTIMICROBIAL AGENT IN THE
DEVELOPMENT OF LIQUID SURFACE DISINFECTANT FOR FOOD
CONTACT SURFACES**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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The antibacterial activity of mint essential oil as a natural ingredient offers a potential replacement for chemical disinfectant for food contact surfaces in food industries. The purpose of this research was to develop a mint oil-based disinfectant and test for its efficacy. Prior to the main research, the minimum inhibitory concentrations of essential oil of two species of mint, peppermint (*Mentha piperita*) and cornmint (*Mentha arvensis*), against *Staphylococcus aureus* and *Escherichia coli* were assessed. The type of mint oil that has a higher activity against both types of bacteria mentioned previously was used in the disinfectant formula. The disinfectant was made of 1.25% peppermint oil, Tween 80 as a stabilizer, and water. Three formulas of disinfectant were made by varying the concentration of Tween 80, which were 0.5%, 5%, and 10%, to analyze the stability of the emulsion formed. The result of the disinfectant efficacy testing against *Staphylococcus aureus* and *Escherichia coli* shows that there were no significant differences between the number of bacteria before and after contact with the disinfectant for both types of bacteria. Furthermore, the increase of Tween 80 concentrations decreases the reduction of the number of bacteria after contact with disinfectant. This suggests that Tween 80 reduces the antimicrobial activity of peppermint oil.

Keywords: Peppermint oil, Cornmint oil, Escherichia coli, Staphylococcus aureus, Essential oil, Antimicrobial activity.



DEDICATION

I dedicate this work to my beloved parents who have educated me.



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