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Antibacterial Activity of *Citrus hystrix* D.C Leaf Extract Against Food Pathogens

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Structured Abstract

Background: Foodborne illness such as diarrhoea and stomach pain caused from pathogenic bacteria is a huge problem especially to the food and beverages industry. With the emergence of these pathogenic bacteria, the usage of antibiotics may be futile as the abuse of antibiotics with improper usage could lead to bacterial resistance towards antibiotics. Therefore, research using natural products such as *Citrus hystrix* D.C leaf extract on combatting these food pathogens can be used as an alternative for the antibiotics in the reduction of foodborne illness cases.

Methods: Susceptibility tests were performed using disk and well diffusion to observe on the formation of the zone of inhibition. The MIC were performed using microdilution assay. Resazurin dye was used for observing the MIC and concentration prior the colour change indicates as the MIC. Bacterial growth reduction were performed too in order to determine the efficacy of this leaf extract in reducing the bacterial growth for 24 hours.

Results: The results obtained indicates that by increasing the concentration of the leaf extract will give higher zone of inhibition. Besides, the MBC result from this study shows that the *Citrus hystrix* D.C leaf extract are bactericidal against all food pathogens. From the bacterial growth reduction, it can be deduced that this leaf extract is dependent on the time of exposure and dose. Despite the reduction of bacteria were proven, the percentage of reduction appears to be low.

Conclusion: This study showed that *Citrus hystrix* D.C leaf extract are the most effective against the gram-positive bacteria followed with the Gram-negative bacteria. Besides, this study can be improved especially on the bacterial growth reduction in terms of increasing the time of treatment inhibition and checking the turbidity at a period of time. Thus, proving that *Citrus hystrix* leaf extract could serve as a promising potential on inhibiting these good pathogens.

Keywords: *Citrus hystrix* D.C leaf extract, food pathogens, antibacterial treatment, Minimum Inhibitory Concentration (MIC), Minimum Bactericidal Concentration (MBC)

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