UNIVERSITI TEKNOLOGI MARA

THE EFFECTIVENESS OF ANTIMICROBIAL FRUIT EXTRACT SOLUTIONS AGAINST MICROBIAL IN READY TO EAT VEGETABLES

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Project submitted in fulfilment of the requirements

for degree of

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(Hons.)

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DECLARATION BY STUDENT

Project entitled "The Effectiveness of Antimicrobial Fruit Extract Solutions against Microbial in Ready to eat Vegetables" is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly with due reference to literature, and acknowledgement of collaborative research and discussion. The project done under the guidance of Project Supervisor, Dr.Nadiatul Syima binti Mohd Shahid. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

Student's signature

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Bismillahirahmanirrahim….

In the name of Allah, The Most Gracious and The Most Merciful…

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TABLE OF CONTENT

ABSTRACT

The consumption of ready to eat vegetables was become attractive to the consumers as it was healthy and convenient meals. However, it potential to transmit the disease since it was receive minimal processing which usually consumed raw without cooking. The microbial can growth on ready to eat vegetables since it provide favourable condition and the process involved may not efficient to eliminate them. The antimicrobial solution was used as additional washing solution to inhibit and reduce the bacteria growth on the surface on ready to eat vegetables.The result showed all the lettuce and winged beans at the hypermarket and wet market were contaminated by *Escherichia coli* and *Staphylococcus aureus.* However, there was no presence of *Salmonella spp*. detected on lettuce and winged beans at hypermarket and wet market. There was no significant difference ($p \geq 0.05$) between bacterial count on ready to eat vegetables at hypermarket and wet market. The antimicrobial activity of fruit extract showed the tamarind extract has highest antimicrobial activity against *Staphylococus aureus* with inhibition zone 28.67mm while Passion extract has highest antimicrobial activity against *Escherichia coli* with inhibition zone 19.00 mm. The bacteria reduction on winged beans after applied tamarind extracts showed the 3% tamarind extract solution was reduce 3.23 log 10 CFU/ml^{-1} compared to 1% of tamarind extracts with 3.08 log 10 CFU/ml^{-1}. The result obtained from this study can be used as baseline data on the antmicrobial activity of fruit extracts. The natural antimicrobial solution in this study can be improved to reduce microbial growth in other food instead of ready eat vegetables.

Keyword: *Staphylococcus aureus, Escherichia coli,* antimicrobial fruit extract solution