UNIVERSITI TEKNOLOGI MARA

MICROBIOLOGICAL QUALITY OF CERTIFIED AND NON-CERTIFIED ORGANIC VEGETABLES IN KLANG, SELANGOR

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Project submitted in fulfillment of the requirements for the degree of
Bachelor in Environmental Health and Safety (Hons.)

Faculty of Health Sciences

July 2018

DECLARATION BY STUDENT

Project entitled "Microbiological quality of certified and non-certified organic vegetables in Klang, Selangor" 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 was done uner the guidance of Project Supervisor, Dr Farah Ayuni Bt Shafie. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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ACKNOWLEDGEMENT

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

Alhamdulillah, all the praise and thanks are for the most Merciful and Almighty, Allah for the blessing and helping me completed this thesis on 'Microbiological quality of certified and non-certified organic vegetables in Klang, Selangor'.

I am highly obliged and give my greatly gratitude to my supervisor, Dr Farah Ayuni Bt Shafie. Without her guidance, constant encouragement, dedication and advice throughout this project. Her valuable encouragement, suggestion and sincere effort are also thankfully acknowledge. I feel greatly honored by getting opportunity to work under her guidance. A lot of challenges and experience had taught me to become a better person in order to complete the project.

I would express special thanks and gratitude to all lecturers of Environmental Health and Safety who give me valuable correction, suggestion and guidance during my presentation so that I could made improvement in my project. My sincere thanks also to Mdm Rohaiza and all laboratory assistants for their whole hearted cooperation and helps in my works.

Besides, I am respectfully thank to HS243 members for their supports, cooperation and valuable suggestion to complete my thesis. I am immensely indebted with them for their unfailing friendship and continuous motivation during my works. Those memory and experience with them always be place in my memory.

No words can express my thanks to my lovely parents, Mr Adnan bin Mohamad and Mdm Rohani binti Jusoh for their endless love, pray and always stood with me in all my life. Without them, this thesis would not be complete and remain a dream.

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ABSTRACT

Non-certified organic produces were suggested to contain a greater risk of microbial pathogenic contamination than certified organic vegetables. However, there is no evidence to indicate certified organic food is safer than non-certified organic food. This study aimed to assess the microbiological quality of certified and non-certified organic vegetables sold in Klang, Selangor. A total of 72 samples of certified and non-certified organic vegetables had been collected from organic grocery stores and supermarkets and analyzed by using microbiological examination to determine the microbial load of (*Escherichia coli*, coliform, *Staphylococcus aureus* and *Salmonella*) in certified and non-certified organic vegetables. Chi-square and Man Whitney test used to identify significant or correlation between variables. This study found the *E. coli* mean count (0.21 and 0.70 $\log_{10}$ cfu g^{-1} for certified and non-certified), coliform mean count (3.5 and 3.85 $\log_{10}$ cfu g^{-1} for certified and non-certified) and *Staphylococcus aureus* mean count (3.13 and 3.50 $\log_{10}$ cfu g^{-1} for certified and non-certified). Salmonella was not isolated in all of the analyzed samples. The result revealed there is no significant difference between certified and non-certified organic vegetables in *Escherichia coli* (p= 0.050) meanwhile there are significant difference found for coliform (p= 0.008) and *Staphylococcus aureus* (p=0.007). This study also revealed 13.9% (*E. coli*) and 90.3% (*Staphylococcus aureus*) did not meet the Public Health Laboratory Service (PHLS) guidelines for microbiological quality. The result of this study concludes non-certified organic produce poses a substantially greater risk of microbial contamination than does certified organic vegetables and consumer may have potential health risk if they were consumed raw.

Keywords: organic, vegetables, *E. coli*, coliform, *Staphylococcus aureus, Salmonella*