UNIVERSITI TEKNOLOGI MARA

HEAVY METALS IN LOCAL AND IMPORTED ORGANIC VEGETABLES AND THEIR POTENTIAL HEALTH RISK

SITI KHADIJAH BINTI SUNARNO

Project submitted in fulfillment of the requirement for degree of

Bachelor in Environmental Health and Safety

(Hons.)

Faculty of Health Sciences

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DECLARATION BY STUDENT

Project entitled "Heavy Metals in Local and Imported Organic Vegetables and Their Potential Health Risk" 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 under the guidance of project supervisor, Dr. Farah Ayuni Bt Shafie. 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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In the name of Allah, The Most Gracious, The most Merciful

Assalamualaikum, first praised is To Allah, the Almighty, on whom ultimately we depend for sustenance and guidance. I praised Allah for the strength and His blessing I managed to complete my study. Peace and blessing to Nabi Muhammad S.A.W, all prophets and their families

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ABSTRACT

The rising of organic food industry all over the world show that the organic food is now acceptable among the consumer. This situation supported by the increase of farming land of organic vegetables in almost 179 countries all over the world since 2014. In Malaysia, the organic industry is still in the new era but shows the rising trend as the world demand. The study focus on the monitoring of heavy metals (Pb, Cd and Cu) in the organic vegetables and to compare the concentration of heavy metals between imported and local organic vegetables. The study collected 96 samples of vegetables from the local markets. The vegetables involved in the study were carrot, tomato and cabbage and each vegetable collected based on different origin. The samples later prepared by using conventional dry ashing method before being analyzed by usingGraphite Furnace Atomic Absorption Spectroscopy (GFAAS). The data obtained from the analysis were analyzed by using Independent T-test and one way Anova. The Target Hazard Quotient (THQ) calculated to determine the health risk of food consumption. The results showed that only Cu were detected in the analysis. Only tomato shows the significant difference in term of origin. There is no health risk for food consumption as the calculation of THQ is less than 1. Monitoring of organic vegetables should be conducted periodically to ensure the safety and quality of the organic vegetables.

Keywords: Organic vegetables, heavy metals, health risk assessment, imported and local vegetables.