UNIVERSITI TEKNOLOGI MARA

PESTICIDE RESIDUES CONTENT IN IMPORTED AND LOCAL CITRUS FRUITS

NUR AZRIZAN BINTI MOHD PADANG

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

Faculty of Health Sciences

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Declaration by Student

Project entitled "Pesticide Residues Content in Imported and Local Citrus Fruits" is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Tn Haji Hashim Bin Ahmad as Project Supervisor. 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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(Nur Azrizan Binti Mohd Padang)
2009265356
900607-10-5794

Date: 15 JULY 2013

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~Nur Azrizan Binti Mohd Padang, 2009265356~

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Abstract

Pesticide Residues Content In Imported And Local Citrus Fruits

Nur Azrizan Binti Mohd Padang

Introduction: Fresh citrus fruit is one of the parts of a healthy diet as they are a significant source of vitamins and minerals. Citrus which included in group oranges is a minor agricultural crop in Malaysia. Moreover the bulk of oranges are imported annually especially on Chine New Year Celebration. **Objective:** The study aim is to evaluate organophosphorus (OPs) pesticide residues level in local and import oranges and its potential risk to human health which is the compound of organophosphorus (OPs) pesticide include Dichlorvos, Ethoprophos, Methyl Parathion, Fenchlorphos and Disulfoton. **Literature Review**: Organophosphorus pesticides (OPs) have been widely used in agricultural environments to protect crops against a range of pests since the ban of organochlorine insecticides, such as DDT, due to their broad spectrum of insecticidal activity, effectiveness, and the nature of non-persistence in the environment (Chung and Chan 2010). Human exposure may result in acute and delayed health effects. Residues of pesticide could affect the ultimate consumer's health especially when freshly consumed (Zhang, Liu et al. 2007). **Methodology:** Total sample size is 60 sample (n=60) which is grouping into import and local citrus fruits. *Liquid-liquid extraction by rotary evaporator and High Performance Liquid Chromatography (HPLC)* used approaches on this study for the analysis of pesticide residues in fruit samples. **Findings:** According on the HPLC data, Dichlorvos and Ethoprophos pesticide were detected and the amount was exceeding the Maximum Residue Levels (MRLs) by the standard of EU Pesticide Database (Dichlorvos -0.01mg/kg) in two samples detected (China-0.384, 0.047mg/kg) and (Ethoprophos-0.02 mg/kg) in five samples (China-1.400mg/kg, Egypt-0.125mg/kg, Malaysia-0.035mg/kg, Thailand-0.200mg/kg, Vietnam-0.155mg/kg). Hazard index showed the value is more than 1 and classified it as risk for consumer. **Conclusion and Recommendation:** Pesticide usage around world is rapidly increasing and cases of misuse or over-use of pesticides are simultaneously on the increase. In the backdrop of such a situation, it is essential to impart proper education to the farming community about hazards involve in the misuse of toxic/persistent pesticide and formulation of laws and their enforcement. In addition, periodical monitoring of food commodities for pesticides is essential to assess the level of their contamination.

Keywords: *High Performance Liquid Chromatography (HPLC)*, Organophosphorus pesticides, EU Pesticide Database