DETERMINATION OF HEAVY METALS IN VEGETABLES AT CAMERON HIGHLANDS

NOOR ANIZA HUSSAIN

Final year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
In the Faculty of Applied Sciences
University Teknologi MARA

MAY 2010

This Final Year Project Report entitled **"Determination of Heavy Metals in Vegetables at Cameron Highlands"** was submitted by Noor Aniza bt Hussain, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

Mdm. Sabarina Md. Yunus
Supervisor
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Prof Madya Dr Zaini Hamzah
Co-Supervisor
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Miss Sabrina M. Yahaya
Project Coordinator
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Dr. Siti Halimah Sarijo
Head of Programme
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date : 24/5/2010

ACKNOWLEDGEMENT

First and foremost, I would like to thank to my helpful and supportive supervisor, Mrs. Sabarina Md Yunus for the valuable guidances and advices. She inspired me greatly to work in this project

A grateful appreciation is also conveyed to my co-supervisor Assoc. Prof Dr Zaini b. Hamzah, for his explanation and cooperation in giving information. Furthermore, Assoc Prof Dr Ahmat b. Saat, who took me on the process of learning of the instrumentation.

Finally, an honorable mention goes to my family and friends for their understandings and supports on me in completing this project. Without helps of the particular that mentioned above, I would face many difficulties while doing this project.

Noor Aniza bt Hussain

May 2010

TABLES OF CONTENTS

ABSTRACT

DETERMINATION OF HEAVY METAL IN VEGETABLES AT CAMERON HIGHLANDS

Cameron Highlands is a highland region located about 121 km east of Ipoh and about 214 km north of Kuala Lumpur, in Pahang, Malaysia. This study is carried out in Cameron Highlands because it is the main source where the vegetables are produced and fulfill people need and also the biggest vegetables plantation in Malaysia. Five samples were collected based on different classification of vegetables and the samples were analyzed for their heavy metals content such as zinc, copper, lead and arsenic using Energy Dispersive X-Ray Fluorescence. The results show that zinc in green bean and water crest are above the maximum permitted level by Food Act 1983 and Food Regulation 1985 that is 60.81 mg/kg and 57.84 mg/kg respectively. Meanwhile, copper, lead and arsenic below the maximum permitted level. The value for the maximum permitted level for copper, lead and arsenic are 40.00 mg/kg, 2.00 mg/kg and 1.00 mg/kg respectively. In addition, heavy metal that contained in the vegetables mostly related to the heavy metals that are available in the soil.