

UNIVERSITI TEKNOLOGY MARA

**DETERMINATION OF LEAD AND CADMIUM IN
COMMERCIAL INSTANT COFFEE AND POTENTIAL
HEALTH RISK**

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**Project Paper Submitted In Partial Fulfilment of The Requirements
For The Degree Of
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Declaration by Student

Project entitled "Determination of Lead and Cadmium in Commercial Instant Coffee and Potential Health Risk 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 Encik Ahmad Razali bin Ishak as Project Supervisor and Encik Mohd Izwan bin Masngut as Co-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).

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Abstract

Determination of Lead And Cadmium In Commercial Instant Coffee And Potential Health Risk

Nurul Afika binti Erizal

This study was carried out to determine the lead and cadmium in commercial instant coffee at Klang district. The result for this study will be used to estimate the potential health risk to the consumer. The sample size is 30 ($n=30$) consist of 15 sachet of man coffee product and 15 sachet of women coffee product. It is a cross sectional study. The sampling collection is by purchasing the commercial instant coffee at the retail shop and night market. The sample has to be prepare by acid digestion method by adding the Nitric acid and Hydrochloric acid. Next, the sample will be analysing by Graphite Furnace Atomic Absorption Spectroscopy (GFAAS) to detect the lead and cadmium. There is a concentration of lead and cadmium in coffee products. According to the mean concentration of lead in commercial instant coffee which is 1.3210 mg/kg, it is still below the maximum permitted proportion by Food Act 1983 and Food Regulation 1985. While, the mean concentration of Cadmium in commercial instant coffee which is 2.5886 mg/kg, it is exceeding the maximum permitted proportion by Food Act 1983 and Food Regulation 1985. For mean concentration comparison between man coffee product and women coffee product, Mann-whitney test identified that both P-value more than 0.005. It indicates that there is no significant difference of heavy metal concentration between man and woman coffee product. The potential health risk has been identified by calculating the Hazard Index (HI). The result is below < 1 which mean there are no adverse human health effects are expected to occur. Even the mean concentration of lead is below the permissible limit, it is still shows that there is a coffee product that is contain lead as well as cadmium which is proven due to mean concentration exceed the permissible limit. Authorities should take immediate action and the consumer should more careful before choosing a coffee product.

Keyword: Lead, Cadmium, Commercial Instant Coffee, Man Coffee Product, Woman Coffee Product