

UNIVERSITI TEKNOLOGI MARA

**HEAVY METALS IN COFFEE MIXTURE
AND ITS POTENTIAL HEALTH RISK**

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Project submitted in fulfilment of the requirements

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Declaration by student

Project entitled Heavy Metal in coffee mixture and its 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 to reference to the literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Tuan 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).

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ABSTRACT

HEAVY METALS IN COFFEE MIXTURE AND ITS POTENTIAL HEALTH RISK

Siti Nabilah binti Abd Jalal

The global trade of coffee has grown rapidly and it is reported that 40% of world population is estimated in habitually consuming the coffee. The extensive use of coffee entails the evaluation of heavy metals content in it. A study was conducted to determine the concentration of heavy metals (Pb, Cd, Mn) in coffee mixture of different brands and batch of manufactures and its potential risk to human health. The coffee mixture samples (n=36) were randomly collected at local market. The heavy metals in coffee mixture were determined using dry-ashing method and Graphite Furnace Atomic Absorption Spectrometry (GFAAS). A comparative cross sectional study was carried out between the coffee mixture with different brands and the results were compared with safe limit in Food Regulations 1985. Health risk assessment was carried out by determining the average daily dose and hazard index to identify the probable risk associated with the ingested of heavy metal through the coffee mixture. Lead concentration found was ranging from 0.41 to 2.38 mg/kg, cadmium found with concentration ranging from 0.05 to 0.18 mg/kg and manganese concentration ranging from 0.27 to 6.01 mg/kg. There were six samples of coffee mixture that found to be exceeded the Malaysian food Regulation 1985 standard safe limit of lead in coffee product which is 2 mg/kg. There is significant difference of heavy metal content between each brands of coffee mixture. The hazard index calculated is below than 1, thus demonstrated that there is no significant risk of adverse effect in coffee mixture consumption. However, as coffee became habitual consumption and the their trade keep on rising, their mineral content that contributed to dietary intake need to determined continuously.

Keywords: coffee mixture, Graphite Furnace Atomic Absorption Spectrometry (GFAAS), heavy metals, health risk assessment