DETERMINATION OF HEAVY METALS IN LIPSTICK PRODUCTS USING FLAME ATOMIC ABSORPTION SPECTROMETRY (FAAS)

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ABSTRACT

DETERMINATION OF HEAVY METALS IN LIPSTICK USING ATOMIC ABSORPTION SPECTROMETRY (AAS)

This study was conducted to determine the amounts of heavy metals (cadmium, chromium, lead and nickel) in lipstick of different brands including unbranded lipstick using AAS. These lipstick products were manufactured from different countries. The lipstick samples used were sample A (Malaysia), sample B (China), sample C (Italy), and sample D (unbranded). Wet digestion method was used to extract the heavy metals from the samples. This analysis was carried out using standard calibration method. The measurements of emission signals of cadmium, chromium, lead, and nickel were taken at wavelengths of 228.80, 357.87, 283.31, and 232.00 nm respectively. Based on the results, the amounts and standard deviations of cadmium, chromium, lead, and nickel in sample A (Malaysia) are 48.6±4.1, 21.0±5.0, not detected and 8.2±0.6; sample B (China) are 68.2±4.1, 32.9±4.0, not detected and 10.7±1.1; sample C (Italy) are 66.4±4.1, 37.0±3.2, not detected and 9.1±0.0; and sample D (unbranded) are 68.2±4.1, 89.0±8.0, 286.0±25.1 and 10.1±0.0 μg/g respectively. The contents of cadmium, chromium and nickel in branded lipstick samples exceed the permissible limits that are considered safe to health which are 3.0, 5.0 and 5.0 μg/g respectively. Lead contents in all branded samples are under the permissible limit, 10.0 μg/g. Sample D which is an unbranded lipstick product bought from a night market in Malaysia showed contents of all heavy metals passing over the permissible limits set by World Health Organisation (WHO) and recommendation from Basketter et al, (2003).

CHAPTER 1

INTRODUCTION

1.1 Background

A cosmetic product includes any substance or mixture that is to be used or applied on various outer parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a purpose solely or primarily to cleaning them, perfuming them, altering their appearance and/or correcting body odours and/or protecting them or keeping them in good condition (Alsaffar and Hussein, 2014).

Women have utilized cosmetics for centuries with the aim to change or improve physical appearance, negotiate femininity concept, fight against external manifestation of aging, challenge society view of gender norms, and display social statistics. The beauty industry has grown rapidly in profits, prominence and also resilience over history.