ANALYSIS OF HEAVY METALS IN COW-MILK BASED INFANT FORMULA

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ABSTRACT

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Most of dairy products especially milk are very popular all over the world as a daily consumed by human as the nutritional balance food and has major sources of the nutrients especially for infant in the first six months of life. Infant milk formulas intentionally manufactured to supply essential elements in the diets of newborns. These elements are necessary for biological process and play an importance role in development of infants. However, some of essential elements become toxic when their concentration are exceed and above the allowable limit as they create significant health effect to infants. In this study, the concentration of Cadmium (Cd), Copper (Cu), Nickel (Ni), Lead (Pb) and Zinc (Zn) were analyzed throughout Inductively Coupled Plasma Optical Emission Spectrometry for seven different brands of infant formulas which retailed in Malaysia market. From the results obtained, Zn has the highest concentration in infant formulas followed by Cu, Pb, Ni and Cd. The concentration of Zn, Cu, Pb and Ni were from 0.3467 mg/kg to 0.9833 mg/kg, 0.1433 mg/kg to 0.2533 mg/kg, 0.0133 mg/kg to 0.0267 mg/kg and 0.0033 mg/kg to 0.0100 mg/kg, respectively for all seven different brands of the infant milk formulas. For Cd, the concentration was below the detection limit of the instrument. All heavy metals content in infant formulas were lies within the permissible limit except for Pb level in sample S6 which slightly above the permissible limit. The obtained results were compared to an existing standard for allowable amounts of toxic heavy metals in infant milk formulas and also compared with the previous literature.

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