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ASSESSMENT OF HEAVY METALS CONTAMINATION IN MILK; A REVIEW

BY

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List of tables

Table of Contents

DECLARATION

I declare that this research review paper is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other peoples' work or my own has been used, this has been appropriately acknowledged and referenced following the Busitema University requirements.

Signature…….Date……
……

APPROVAL

This undergraduate research report has been submitted for examination with my/our approval as research supervisor(s).

Signature…….....Date……
…….

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DEDICATION

I dedicate this piece of work to my beloved father, Mr OBETE MOSES and mother SEMMY OBETE, MAXWELL OKUJA, MARTHA ASIO who have done great work to ensure that I reach this far. Their love, care and support cannot be measured may the almighty God bless them abundantly.

I also want to dedicate it to OKIROR MORIS, EKWARO JEREMIAH, JOOLE ANDREW, NAMAASA BRIGHT who have always been together with me in the struggle; I wish you the best in your struggles always.

Finally, I would like to dedicate this piece of work to all my friends, relatives who have supported me spiritually, morally, financially and encourage me through this program.

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ABSTRACT

Milk has been considered one of the unique food sources for children's and even adults and even adults nutrition. Cow milk is considered one of the responsible food sources contaminated with heavy metals. This review was to assess the heavy metal contamination in milk. Several methods used in heavy metal determination in milk have also been reviewed.Heavy metals such as Lead, Chromium, Cadmium, Arsenic, and Mercury have been the significant areas of interest in this review. The primary heavy metal analysis methods are atomic absorption spectroscopy (AAS) and Flame Atomic Absorption Spectroscopy (FAAS). Heavy metal contamination remains a significant concern due to the high heath risk involved due to their exposure.

1.0 INTRODUCTION

1.1 BACKGROUND

Milk is an essential food for the human diet. Milk is considered a complete food because it consists of vital nutrients such as proteins, essential fatty acids, lactose, vitamins, and minerals in balanced proportions. However, milk and dairy products can also contain chemical hazards and contaminants, which may give a poor commercial image and affect the consumers.

(Achmad, 2017).

As far as nutrition is concerned, the metal contents of milk and dairy products can be grouped into essential elements (iron, copper, and zinc) at low doses and non-essential or toxic ones (lead and cadmium). The presence of the latter, even in low concentrations, is of no value and causes metabolic disorders with severe impacts. (S. Khan, Cao, 2008). Dairy animals take in metals while grazing on the pasture and when fed on contaminated concentrate feeds. However, the transfer of minerals to milk in the cow is highly variable. (S. Maas, E. Lucot, 2011).

Toxic metals such as lead and cadmium are common air pollutants and are emitted into the air due to various industrial activities. (WHO, 2007). Various industrial environmental contamination of soil, waters, foods and plants with these metals is incorporated into the food chain. It causes a significant threat to human and animal health. (N. Bilandzic et al., 2011).

Lead and cadmium residues in milk and dairy products are of particular concern since infants and children essentially consume them. Over 90% of the total Cadmium intake in non-smokers is through food, although inhalation also contributes in very contaminated areas. (WHO, 2007). Lead and cadmium are considered potential carcinogens and originate several diseases in the cardiovascular system, kidneys, nervous system, blood and skeletal system.

(P. Zhuang, M.B.McBride, H.Xia,N.Li, Z. Li, 2009)

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