

# Accepted Manuscript

Assessment of heavy metals in raw food samples from open markets in two African cities

Yannick Nuapia, Luke Chimuka, Ewa Cukrowska



PII: S0045-6535(17)32112-4

DOI: 10.1016/j.chemosphere.2017.12.134

Reference: CHEM 20515

To appear in: *Chemosphere*

Received Date: 08 May 2017

Revised Date: 18 December 2017

Accepted Date: 22 December 2017

Please cite this article as: Yannick Nuapia, Luke Chimuka, Ewa Cukrowska, Assessment of heavy metals in raw food samples from open markets in two African cities, *Chemosphere* (2017), doi: 10.1016/j.chemosphere.2017.12.134

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# 1 Assessment of heavy metals in raw food samples from open markets in two African cities

2  
3 Yannick Nuapia, Luke Chimuka, Ewa Cukrowska<sup>1</sup>

4 Molecular Sciences Institute, School of Chemistry, University of Witwatersrand, Private Bag X3, Johannesburg,  
5 2050, South Africa

6 E-mail: [ewa.cukrowska@wits.ac.za](mailto:ewa.cukrowska@wits.ac.za)

## 7 Abstract

8 The present study was performed to assess the level of biologically potent metallic elements (Al,  
9 Cd, Cr, Cu, Hg, Mn, Pb and Zn), metalloid (As) and non-metal (Se) in different raw food from  
10 open markets in Kinshasa (Democratic Republic of Congo) and Johannesburg (South Africa).  
11 Hundred twenty different food samples comprising of cabbage, bean, beef and fish were  
12 collected, digested in the microwave system and analysed for trace metals using ICP-OES, ICP-  
13 MS and mercury analyser. The obtained results were used to evaluate the health risk of these  
14 elements via consumption of foods. The investigation revealed that the mean level of trace  
15 elements ranged Al:  $1.62 \pm 0.32$  to  $52.10 \pm 3.45$ , As:  $1.62 \pm 0.32$  to  $5.33 \pm 1.04$ , Cd:  $0.16 \pm 0.09$  to  
16  $3.93 \pm 0.12$ , Cr:  $0.58 \pm 0.24$  to  $17.29 \pm 2.03$ , Cu:  $0.69 \pm 0.15$  to  $15.70 \pm 1.67$ , Hg:  $1.53 \pm 0.1$  to  
17  $2.94 \pm 0.23$ , Mn:  $5.34 \pm 1.37$  to  $18.31 \pm 3.45$ , Pb:  $0.16 \pm 0.09$  to  $4.14 \pm 1.08$ , Se:  $0.18 \pm 0.08$  to  
18  $1.41 \pm 0.97$ , Zn:  $5.47 \pm 1.83$  to  $75.12 \pm 5.67$  mg kg<sup>-1</sup>. The average values of As, Cd, Cr, Cu, Hg, Mn,  
19 Pb, Se and Zn in raw foods collected from Johannesburg market were significantly higher ( $p <$   
20  $0.05$ ) than those from the Kinshasa market. While the highest Al contents ( $p < 0.05$ ) were found in  
21 the food sold in Kinshasa open market. The levels of most studied metals in the raw foods were  
22 exceeding the recommended maximum acceptable limit proposed by the Joint FAO/WHO

---

<sup>1</sup> Corresponding author

E-mail address: [Ewa.Cukrowska@wits.ac.za](mailto:Ewa.Cukrowska@wits.ac.za)

Download English Version:

<https://daneshyari.com/en/article/8852109>

Download Persian Version:

<https://daneshyari.com/article/8852109>

[Daneshyari.com](https://daneshyari.com)