

Mycotoxin exposure in Nigerian children under two years of age: A comprehensive biomonitoring assessment

Chibundu N. Ezekiel^{1,2}, Wilfred A. Abia^{2,3,4}, Dominik Braun⁵, Bojan Šarkanj^{2,6}, Kolawole I. Ayeni¹, Oluwawapelumi A. Oyedele¹, Emmanuel C. Michael-Chikezie^{7,8}, Victoria C. Ezekiel⁹, Beatrice Mark¹⁰, Chinonso P. Ahuchaogu¹¹, Rudolf Krska^{2,3}, Michael Sulyok², Paul C. Turner¹² and Benedikt Warth^{5*}

¹Babcock University, Nigeria

²University of Natural Resources and Life Sciences Vienna, Austria

³Queen's University Belfast, United Kingdom

⁴University of Yaounde I, Cameroon

⁵University of Vienna, Austria

⁶University North, Croatia

⁷Clifford University, Nigeria

⁸Babcock University, Nigeria

⁹Independent Researcher, Nigeria

¹⁰Babcock University Teaching Hospital, Nigeria

¹¹Babcock University Teaching Hospital, Nigeria

¹²University of Maryland, USA



Abstract

Dietary mycotoxin exposure in infants determined by examining several biological samples is scarce. Consequently, we adopted a multi-specimen, multi-mycotoxin approach to elucidate mycotoxin co-exposure patterns in 65 infants (aged 1–18 months) in Nigeria. Samples of breast milk and complementary food fed to the infants and their excreted urine were collected from the infants and analyzed by ultra-sensitive LC-MS/MS methods. The food samples were contaminated with seven mycotoxin classes, including aflatoxins (21% samples; max: 16 µg/kg) and fumonisins (33% samples; max: 167 µg/kg). Breast milk samples contained seven classes of mycotoxin including aflatoxin M1 (18% samples; max: 2 ng/L), and two mycotoxins (dihydrocitrinone (27% samples; max: 60 ng/L) and sterigmatocystin (4% samples; 1.2 ng/L)) detected for the first time. About 98% of the urine samples contained mycotoxins and up to seven mycotoxin classes were observed. Aflatoxin Q1 was the major aflatoxin metabolite in infant urine, occurring in 68% samples compared to aflatoxin M1 found in 9% samples. About 2–4, 2–6 or 2–6 different mycotoxin classes were found as mixtures in 33%, 100% and 86% of complementary food, breast milk and urine, respectively. All sample type contained mixtures of the carcinogenic aflatoxin and fumonisin. Overall, more mycotoxin occurrence mixtures and higher mean concentrations were found in the urine of non-exclusively breastfed children compared to exclusively breastfed infants.

Biography:

Chibundu holds a PhD from University of Ibadan (Nigeria) and postdoctoral studies from the Institute of Bioanalytics and Agro-Metabolomics, University of Natural Resources and Life Sciences Vienna (BOKU), Austria. He is presently Professor (Associate) of Food Microbiology and Mycotoxicology at Babcock University since 2018. He is author and collector of these novel fungal species: *Aspergillus aflatoxiformans*, *A. austiwickii*, *A. cerealis* and *Fusarium madaensis*. He has published more than 90 papers in reputed peer-review journals and serves as reviewer for top environmental and public health journals such as *Environment International*, *The Lancet Global Health* and *Lancet Planetary Health*.

[25th International Conference on Food and Nutrition Science; Osaka, Japan - September 29-30, 2020](#)

Abstract Citation:

Chibundu N. Ezekiel, [Mycotoxin exposure in Nigerian children under two years of age: A comprehensive biomonitoring assessment, 25th International Conference on Food and Nutrition Science; Osaka, Japan - September 29-30, 2020.](#)

