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Heavy Metal Toxicity and Infant Foods

Abstract: A healthy, adequate, and safe diet that meets nutritional needs is essential for normal growth, development, physiological and metabolic functions. Babies and infants have underdeveloped organs and immune systems and are at an increased risk for illnesses and extreme care should be taken to ensure safety and adequacy of foods. An alarming increase of heavy metals in the food system via the soil is due to industrialization and technological advancements. This could result in metal toxicity with adverse health conditions if ingested in harmful amounts. Monitoring agencies tasked with reducing the presence of heavy metals in foods and other products have established safe levels. This study evaluated heavy metals in selected food products for newborns and toddlers. Ten brands of baby foods were analyzed for arsenic, cadmium, zinc, lead, nickel, aluminum, and chromium. Baby formula and processed foods for newborns to 3 years and contain one or more of the following ingredients: dairy, fruits, vegetables, root vegetables, grains, sugar supplement and juice were analyzed. The products were analyzed in triplicates using QQQ-ICP-MS instrumentation to detect the presence of the heavy metals. Mixed model analysis found significant differences in metal concentrations ($p=0.03$) with an average metal concentration of $0.96 \mu\text{g/g}$. No significant correlations were found between the packaging materials used and the observed metal concentrations in the food samples. The study concluded that the presence of heavy metals may be due to food type and the soil in which it is grown and not the packaging materials, establishing food system contamination by heavy metals. The need to further reinforce random quality control checks by monitoring agencies to ensure safe level guidelines are being followed by manufacturers.

Keywords: Heavy metals, baby foods, nutrition, food-system

Biography: Judith Anglin is the Chair of the Department Nutrition and Food Sciences at the University of Vermont (UVM). She is a graduate of Howard University - PhD in Nutrition Sciences with Experimental Nutrition emphasis. Her journey in the field of Nutrition and Dietetics began at the University of Technology in Jamaica. She has over twenty years of experience as a clinical dietitian, researcher, program director, and educator. She has conducted studies and published in peer review journals assessing nutritional status of individuals with chronic diseases including obesity, kidney diseases, diabetes, and sickle cell anemia