ANALYSIS OF URINE SAMPLES FROM YOUNG ADULTS FOR PERSISTENT ORGANIC COMPOUNDS AND METALS

Chioma Ihemadu¹, Naga Naidu¹, Renard Thomas² and Momoh A. Yakubu¹,²

¹Departments of Environmental & Interdisciplinary Sciences, College of Sciences & Technology,  
²Environmental Health, Vascular Biology Unit, Center for Cardiovascular Diseases, College of Pharmacy & Health Sciences, Texas Southern University, 3100 Cleburne Avenue, Houston, TX 77004, USA

Abstract: Persistent organic compounds are known to cause chronic toxic effects in humans such as reproductive toxicity, endocrine disruptors, neurotoxicity, and carcinogenesis. Some of these compounds are banned or their use restricted in the USA – aldrin, dieldrin, endrin, endosulfan, DDE, DDD, and DDT and others are of major health concern right now (BPA). Epidemiological studies have reported correlation between the presence of these compounds, stress indicators, and disease manifestation. Exposure of young adults to these agents is of concern as debilitating disease conditions are increasingly being reported in young adults at the prime of their life. We have investigated the presence of these chemicals, metals, and bilirubin in the urine samples from young adults using the HPLC, ICP-MS, and caffeine assay respectively. The protocol for this study was approved by the TSU CPHS committee and consent of 21 subjects was obtained before urine collection. Urine samples were analyzed and the results indicate the presence of pesticides: aldrin (0.85 to 296), endoulfan 1 (0.37 to 120), endrin (0 to 67.1), dieldrin (0 to 630), and DDT (0.0 to 4.9) ppm; BPA (0 to 102.4) ppb. Metal analysis showed Cr (0 to 1.415) ug/L, Ni (257 to 422), As (0 to 624) ng/L, Cd (0.02 to 1.995) ug/L, Al (107 to 243.5) ng/L, and Pb (257 to 384.1) ng/L. Analysis of the results of the persistent organic compounds and bilirubin in the urine samples were subjected to correlation coefficient. Although some of the young adults show the presence of high concentrations of persistent organic compounds as well as metals in their urine, only dieldrin showed a positive correlation to the concentration of bilirubin a stress indicator. However, there is no cause for alarm as these compounds are within the acceptable limit set by CDC and EPA.

Keywords: Young adults, persistent organic compound, pesticides, bilirubin, DDT, BPA, metals