Assessment of Heavy Metals and Their Estimated Daily Intakes from Two Commonly Consumed Foods (Kulikuli and Robo) Found in Nigeria

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Abstract

Most foodstuffs sold in Nigerian outdoor markets are often susceptible to pollution due to poor packaging. As a case study, this work was aimed at the evaluation of heavy metal (Cd, Cu, Zn, As, Pb and Ni) content of two widely consumed snack foods in the country, namely melon (*robo*) and groundnut *(kulikuli*). The Robo and kulikuli used in this study were purchased from Abeokuta. The products procured directly from the source of preparation served as control samples. All together, a total of two hundred and ninety-four samples were collected for both (*kulikuli* and *robo*) from seven different motor parks and forty-two samples of both (50% for each) formed the control. Samples were ground to powdered form and subjected to acid digestion. The resulting digests were analyzed for the heavy metal concentrations using calibrated atomic absorption spectrophotometer. Field survey was conducted to assess the average consumption of the two food types by an adult of 70 kg body weight and the daily intake of each was then calculated using standard procedures. Results showed that *kulikuli*; *robo* metal concentrations (mg/kg) were 0.23 to 1.25; 0.018 to 0.069; 6.73 to 9.23; 0.07 to 0.47; 13.83 to 33.13 and 16.15 to 53.91 for As, Cd, Cu, Ni, Pb and Zn respectively. Estimated daily dietary intake (mg/kg body weight) from the respective *robo* and *kulikuli*, for a 70 kg body weight, were 5.71×10^{-5}; 8.57×10^{-5}, 9.57×10^{-3}; 1.1×10^{-2} , 1.57×10^{-4}; 4.14×10^{-4} , 8.86×10^{-4}; 1.2×10^{-3} , 2.33×10^{-2}; 3.5×10^{-2} and 2.76×10^{-2}; 6.5×10^{-2} for Cd, Cu, Ni, As, Pb and Zn, respectively. Only Pb was above permissible level and based on estimated daily intake, risk factor decreased as Pb > As > Zn > Cu > Cd > Ni.

Keywords

Foods, metal, contamination, environment, Nigeria