عنوان مقاله:

Risk Assessment of Toxic Heavy Metals Concentration of Fish and Drinking Water in Nsukka Metropolis, South East, Nigeria

محل انتشار:

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خلاصه مقاله:

Background: Toxic Heavy Metals (THMs) threaten food safety and result in human poisonings. It seems to be few studies on THMs contamination in food chain in developing countries. Current investigation determine the concentration and health risk of arsenic (As), cadmium (Cd), lead (Pb), as well as mercury (Hg) in fish and water at Nsukka, Metropolis, Enugu state, Nigeria. Methods: Forty eight samples; ۲۴ (catfish and tilapia) fish and ۲۴ (borehole, sachet, and bottled) water were randomly collected from two major markets and districts in Nsukka Metropolis and were evaluated for THMs using Atomic Absorption Spectrophotometer. The Estimated Daily Intake, Target Hazard Quotient, Hazard Index, and Cancer Risk (CR) were assessed as well. Results: THMs analaysis showed that As, Cd, and Hg were at ۱۰۰% and Pb being at ۱۶% in all the fish samples while ۱۲.۵% of fish of exceeded the Hg Maximum Permissible Limit (MPL) of ۰.۰۵۰ mg/kg, that not statistically significant (p>۰.۰۵).On the other hand, based on the analysis of all water samples, Hg and As were detected at ۱۰۰% rate, Cd at ۵۸.۳% while Pb was not identified. The values above the MPL appeared to be ۹ (۳۷.۵%), ۲ (۸.۳%), and ۳(۱۲.۵%) for Hg, As, and Cd, respectively in water while not statistically significant (p>۰.۰۵). The mean value of Hg (۰.۰۶۴۲۵ mg/kg) in roasted fish as well as Cd (۰.۰۰۶۵ and ۰.۰۱۰۵) mg/ml in tap and bottled water respectively surpassed the MPL although not statistically significant (p>۰.۰۵). The Estimated Daily Intake of THMs except Cd in fish were proved to be within the Provisional Tolerable Daily Intake in contrast with As and Cd in water. CR is present both in children and adults with CR value >۱. Conclusion: The finding of THMs in fish and water above the MPL is regarded as potential health risk for the consumers of such contaminated water and fish in the investigation scope. DOI: ۱۰.۱۸۵۰۲/jfqhc.۱۰.۴.۱۴۱۷۷

کلمات کلیدی:
Heavy Metal Poisoning, Drinking Water, Food Safety, Fishes, Nigeria