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Health risk of lead poisoning in four edible snail samples obtained from Bayelsa State, Nigeria

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Lead over the years has been a major environmental nuisance, and lead poisoning is a significant epidemic in many countries in the world including Nigeria. Most often, lead poisoning has been identified as a chronic environmental disease which later develops long-term adverse health effects. However, this study investigated the concentration, fractionation, and potential health risk of lead in four edible snails (*A. achatina, L. flammea, P. aurita*, and *T. fuscatus*) obtained from Bayelsa State, Nigeria using Flame Atomic Absorption Spectrometer (FAAS). The mean concentrations of lead (mg/kg dry wet basis, mean±SD) were: *A. achatina* (29.5±5.41), *L. flammea* (8.00±1.00), *P. aurita* (37.7±2.47), and *T. fuscatus* (27.8±2.89). These values were higher than the permissible limits of FAO/WHO and FEPA. Speciation analysis showed that the water soluble fraction were below the limits of WHO and FEPA. Polar and non-polar fraction were below detection limits (BDL), indicating non-availabilities of polar and non-polar lead species in the snails, while the residual fraction were higher than the acceptable limits of WHO and FEPA. Health risk assessments results revealed that the chronic daily intake (CDI) of lead in the snails were in the decreasing order of *P. aurita* > *A. achatina* > *T. fuscatus* > *L. flammea* with values of 15.52, 12.14, 11.14, and 3.29 respectively. These values are higher than the provisional daily intakes of lead set by WHO and FEPA. The non-carcinogenic health risks of lead in the snails were generally low (THQ=HI<1), indicating non-cancer adverse health risk at the moment. However, the carcinogenic risk index of lead in the snails was within the threshold values of 1.0x10-6-1.0x10-4 set by USEPA. Therefore, considering the bioacculative nature of lead, these snails should be consumed moderately.

Biography

Douye P Markmanuel obtained her BEd in Chemistry (2nd class upper) in 2002 from the University of Ibadan, Nigeria, MSc (2011), and PhD (2016) in Environmental Chemistry, University of Port-Harcourt, Nigeria. Her working life is centered on Education and Research. She was employed as Master Grade II Teacher in Bayelsa State college of Arts and Science, (2005) where she taught Chemistry in the Senior Secondary Section. In 2006, she was upgraded to the rank of an Instructor in the main college. Following the establishment of Bayelsa State College of Education, Sagbama, she became an Assistant Lecturer in the college. Presently, she is Lecturer I and Head of Chemistry Department. She is a member, and also holds positions in several professional bodies. She has attended several local and international conferences and workshops. Her current research area is Heavy Metals and Health Risks Hazards in Edible Snail Species.

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