

## Profile, health risk assessment and source apportionment of polycyclic aromatic hydrocarbons (PAHs) in terrestrial snails and some aquatic species consumed in parts of Ogbia LGA, Bayelsa, Nigeria

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**Abstract.** The determination of Polycyclic Aromatic Hydrocarbons (PAHs) in giant land snails (*Achatina achatina*) and three aquatic species [mudfish (*Clarias anguillaris*), mud crab (*Scylla serrata*), and prawn (*Palaemon maculatus*)] in Ogbia LGA, their origin and their health implications on consumers were the focus of this work. PAHs analysis was done with Gas Chromatography couple to a Mass Spectrometer Detector (GC-MS), after extractions with 1:1 mixture of hexane and dichloromethane and clean-up with silica gel column. Total PAHs ( $\sum_{16}$ PAHs) in  $\mu\text{g}/\text{kg}$  in edible tissues averaged:  $3342.26 \pm 845.70$  for snails,  $393.14 \pm 452.50$  for fishes,  $382.22 \pm 235.72$  for crabs, and  $344.81 \pm 91.93$  for prawns respectively. The hazard indices showed some potential for non-carcinogenic harms: very high for snails, moderately high for fishes and crabs, and slightly high for the prawns. The calculated benzo(a)pyrene equivalent concentrations (PEC) for species were higher than the estimated screening value (SV) of  $3.95 \mu\text{g}/\text{kg}$ , an indications of possible carcinogenic effects on consumers of these foods. However, the excess cancer risk (ECR) did not indicate threat of additional cancer risk as most of the calculated values (except in some snails' samples with values  $< 10^{-4}$ ) were less than the acceptable standard of  $1.0 \times 10^{-6}$  established by the USEPA. Source diagnostic ratios revealed that source of PAHs were largely pyrolytic. The presence of these PAHs in these edible species, and possible further accumulations and its attendant impacts on human's health calls for periodic monitoring.

**Keywords:** hazard indices; carcinogenic; source diagnostic ratios; petrogenic; pyrogenic.

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