

Peer Review

Review of: "Polycyclic Aromatic Hydrocarbons in Brazilian Food: A Critical Review of Levels, Human Health Risk Assessment, and Potential Gaps in the Recent Literature"

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The paper demonstrates strong relevance and brings attention to a significant issue for human society and regulation, one that is critically overlooked, particularly in Brazil. It is well-written and employs clear language. However, the scientific motivation behind the study could be more explicitly stated in the introduction. Specifically, the paper should clarify the importance of this data in the context of human exposure. Is food a primary route of intake compared to other potential exposure pathways? Or should dietary intake be considered in conjunction with other sources to assess overall risk? While dietary PAH intake is often not considered a primary hazardous exposure route in isolation, the introduction should articulate why its investigation in this context is important. For instance, is it a significant contributor when considering cumulative exposure from multiple sources, or are specific Brazilian dietary habits a concern? And which items would be linked to environmental pollution issues (e.g., sardines)? Would it be a concern, addressing the existing burden of environmental pollution, that could be an additional route of exposure?

Furthermore, the paper would be strengthened by a comparison of the levels found in Brazil with those reported in other countries globally.

Regarding the three primary objectives: (1) to identify critical gaps in existing PAH monitoring frameworks and research protocols, (2) to prioritize areas for future research through a systematic evaluation of current evidence, and (3) to develop data-driven recommendations for regulatory agencies aimed at mitigating PAH exposure within the Brazilian food supply chain, I suggest explicitly addressing

items 2 and 3 in the final section. For instance, which specific areas should be prioritized for future research? What concrete recommendations can be offered to regulatory agencies for PAH exposure mitigation? While item 1 is addressed throughout the paper, it would be beneficial to reiterate and summarize the identified gaps in the final discussion as well.

Finally, I recommend including visual representations of the compounds regulated by governmental bodies, as mentioned in the paper: (1) benzo[a]pyrene and (2) the defined combination of four PAH compounds (PAH4): benzo[a]pyrene, benz[a]anthracene, benzo[b]fluoranthene, and chrysene.

Declarations

Potential competing interests: No potential competing interests to declare.