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Can human biomonitoring studies contribute to improve public health decisions?

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Statement of the Problem: Our previous work has shown the presence of the hazardous chemicals within a complex mixture of contaminants (e.g., metals, pesticides and polycyclic aromatic hydrocarbons) trapped in sediments of a Portuguese estuary. In that case-study, an epidemiological survey confirmed the exposure of the local population mainly through food chain, suggesting the need of a biomonitoring study that includes the quantification of contaminants in biological fluids as well as biomarkers of early biological effects (e.g., biochemical, genetic and omics-based endpoints) in the target population. Recognizing the knowledge gap between exposure to hazardous substances and health outcomes, not only in Portuguese population, but also throughout Europe, the project European Human Biomonitoring Initiative (HBM4EU) has just started, with the overarching goal of generating knowledge towards the safe management of chemicals.

Methodology & Theoretical Orientation: Human biomonitoring will be used to understand the human exposure to chemicals and resulting health impacts. The first steps rely on harmonizing procedures for human biomonitoring across countries, to provide policy makers with comparable data on human internal exposure to chemicals and mixtures of chemicals at EU level. Then, linking data on internal exposure with the hazardous chemicals, will allow to aggregate external exposure and identifying exposure pathways and upstream sources.

Conclusion & Significance: By generating scientific evidence on the causal links between human exposure to chemicals and negative health outcomes, an evidence-base will be established to allow the use of human biomonitoring in chemical risk assessment methodologies to data. The risk management and communication with stakeholders and policy makers will ensure that results are applied in the design of new regulations for chemicals and for supporting public health protection policies.

Biography

Maria João Silva has graduated in Pharmaceutical Sciences and PhD in Human Genetics and Toxicology. She is the Principal Investigator of the Group of Genetic Toxicology, Department of Human Genetics, National Institute of Health, Portugal. She is also a member of the Scientific Coordination of the Center of Toxicogenomics and Human Health, NOVA Medical School, Lisbon. Her research interests include environmental genotoxicity (including nanotoxicology, radiobiology, and mixtures toxicology), DNA repair and molecular epidemiology. She has authored and co-authored over 30 scientific publications.

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