

# The Protective Role of Nutrition Against Environmental Pollutant Toxicities

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## Extended Abstract

Human exposure to environmental pollutants is a major contributor to global chronic diseases, which necessitates strong protective measures. It is pertinent that disease risk from pollutant exposure is largely associated with dietary patterns [1]. Nutrients and other health promoting dietary components play central roles for supporting metabolic processes essential for health. Thus, healthy dietary modifications and supplements can be key towards countering the metabolic dysregulations induced by unavoidable pollutant exposures. Another consideration is that diet is a primary route of exposure to many environmental pollutants. Inflammatory and oxidative stress processes are implicated as key mechanisms of pollutant toxicities. In that regard, I will provide an overview of our human population, animal model and in vitro cell culture studies describing anti-inflammatory and antioxidant mechanisms by which dietary components (omega-3 fatty acids, selenium, polyphenols, probiotics) protect against pollutant exposures. We will discuss the above research in the context of the dietary exposome which refers to the totality of dietary (i.e., pollutants, food components) and internal (i.e., metabolic pathways, oxidative stress, inflammation) exposures that influence health outcomes [2]. The role of omics techniques will be discussed towards identifying: (a) inflammatory and prooxidant metabolites induced by toxic exposures that lead to disease risk; and (b) protective mechanisms against environmental pollutant toxicities involving dietary components. I will explore an overarching concept that the interactions involving the dietary exposome, nutritional status, and environmental contaminants is important to gain a holistic understanding of the risks of developing pollutant-induced diseases.

## References

- [1] Y. Huang and M. Fang, "Nutritional and environmental contaminant exposure: a tale of two co-existing factors for disease risks," *Environ. Sci. Technol.*, vol. 54, no. 23, pp. 14793-14796, 2020.
- [2] C. P. Wild, "The exposome: from concept to utility," *Int. J. Epidemiol.*, vol. 41, pp. 24-32, 2012.