

Climate Change, Marine Microplastics, and Food Safety: What Shrimp Paste Teaches Us

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ABSTRACT:

Climate change and microplastic pollution are two major global environmental issues that increasingly intersect and threaten marine ecosystems and human health. Microplastics (MPs) originate from two main sources: primary MPs, which are intentionally manufactured and directly released into the environment, and secondary MPs, which result from the degradation of larger plastic items. These include microbeads used in cosmetics and medical products, as well as microfibers from clothing and household fabrics discharged via wastewater. Microplastics are now widely detected in various seafood species. Shrimp paste is made from a fermented fishery process, and there has been limited reported contamination of microplastics in shrimp paste in Thailand. This study aims to examine microplastic contaminants in shrimp paste products in Thailand. Thirty shrimp paste product samples were purchased from local markets in 16 provinces, including the Andaman Sea and the Gulf of Thailand. The number and type of microplastics were determined through a combination of visual observation and confirmation with μ -Fourier transform infrared spectroscopy. Five different types of plastic polymers were found: polypropylene, polyethylene, polyisoprene, ethylene propylene copolymer and additives such as cellulose and alpha. Three types of microplastics were found in six samples from Andaman sea products, and all five types were found in 12 out of 15 samples from the Gulf of Thailand. This study confirmed the synergistic impacts of these factors on marine ecosystems and public health. Understanding these interconnected threats is essential for developing comprehensive mitigation strategies, including health risk assessment, improved waste management, sustainable fisheries, and climate-resilient marine policies.

KEYWORDS:

aquaculture, aquatic animals, environmental pollution, food contaminant, marine environment