

Recent advances in inspection technologies of food safety health hazards for fish and fish products

ABSTRACT

The development of reliable and sensitive detection methods is essential for addressing the escalating concerns surrounding fish and fish products, driven by increasing market demands. This comprehensive review presents recent advances in detection approaches, specifically focusing on microplastic, biological, and chemical hazards associated with these products. The overview encompasses 21 distinct detection methods, categorized based on the type of hazard they target. For microplastic hazards, six methods are visual, spectroscopic, and thermal analyses. Biological hazard identification relies on six approaches employing nucleic-acid sequence, immunological, and biosensor technologies. The investigation of chemical hazards encompasses ten methods, including chromatography, spectroscopy, mass spectrometry, immunological, biosensor, and electrochemical techniques. The review provides in-depth insights into the basic principles, general characteristics, and the recognized advantages and disadvantages of each method. Moreover, it elaborates on recent advancements within these methodologies. The concluding section of the review discusses current challenges and outlines future perspectives for these detection methods. Overall, this comprehensive summary not only serves as a guide for researchers involved in fish safety and quality control but also emphasizes the significance of staying abreast of evolving detection technologies to ensure the continued safety of fish and fish products in response to emerging food safety hazards.