OPEN ACCESS Freely available online

Journal of Food: Microbiology, Safety & Hygiene

Perspective

An Overview on Advances in Food Hygiene Technology

Arica Samaeul*

Department of Food Microbiology, Niger Delta University, Amassoma, Nigeria

DESCRIPTION

In the modern era, where the global food supply chain is more interconnected than ever before, ensuring food safety is paramount. Technological advancements have revolutionized the field of food hygiene, providing innovative solutions to mitigate the risk of contamination and safeguard public health. In this we discover the technologies driving progress in food hygiene, from rapid detection methods to smart sanitation systems, and their implications for enhancing food safety standards worldwide.

Rapid pathogen detection

Polymerase Chain Reaction (PCR): PCR is a molecular biology technique that amplifies DNA to detect the presence of specific pathogens in food samples. This method enables rapid and sensitive detection of bacteria, viruses, and parasites, allowing for early intervention and outbreak management.

Enzyme-Linked Immunosorbent Assay (ELISA): ELISA is an immunological assay that detects the presence of pathogens by measuring antigen-antibody interactions. ELISA kits are available for a wide range of foodborne pathogens, providing high specificity and sensitivity for rapid pathogen detection.

Next-Generation Sequencing (NGS): NGS technology allows for the rapid sequencing of DNA and RNA molecules, providing detailed insights into the genetic composition of microbial communities in food samples. NGS-based methods enable comprehensive microbial profiling and the detection of emerging pathogens, enhancing surveillance efforts and response capabilities.

Smart sensors and monitoring systems

IoT sensors can be deployed throughout the food supply chain to monitor important parameters such as temperature, humidity, and pH in real-time. These sensors provide continuous data monitoring and alerts for deviations from optimal conditions, enabling proactive intervention to prevent food spoilage and contamination. Blockchain technology offers a secure and transparent platform for tracking and tracing food products from farm to fork. By recording transactions and data in immutable, decentralized ledgers, blockchain enhances traceability and accountability in the food supply chain, facilitating rapid recall and risk management in the event of food safety incidents. Remote monitoring systems enable food producers and regulators to remotely monitor food processing facilities and storage environments for compliance with food safety standards. These systems use sensors, cameras, and data analytics to identify potential risks and deviations from hygiene protocols, enabling timely corrective action.

Novel sanitation techniques

UV sterilization technology uses ultraviolet light to inactivate microorganisms on food contact surfaces and equipment. UV-C light, with wavelengths between 200 and 280 nanometres, disrupts the DNA and RNA of bacteria, viruses, and fungi, rendering them unable to replicate. UV sterilization provides a chemical-free and environmentally friendly method for enhancing food safety in food processing facilities. Cold plasma technology generates a non-thermal plasma discharge that destroys microbial contaminants on surfaces through oxidation and reactive oxygen species. Cold plasma treatment offers rapid and effective sanitation of food contact surfaces, packaging materials, and equipment, without the use of chemicals or water. Electrolyzed water systems: Electrolyzed water systems produce antimicrobial solutions by electrolyzing water with salt and electricity. These solutions, known as Electrolyzed Oxidizing Water (EOW) or Electrolyzed Reduced Water (ERW), exhibit potent antimicrobial properties against a wide range of pathogens, including bacteria, viruses, and moulds. Electrolyzed water systems offer a safe and sustainable alternative to traditional chemical sanitizers for food processing and sanitation.

CONCLUSION

As the global food industry continues to evolve and expand, so too must our approach to food hygiene and safety. Advances in

Correspondence to: Arica Samaeul, Department of Food Microbiology, Niger Delta University, Amassoma, Nigeria, E-mail: samaeularica@gmai.com

Received: 05-Feb-2024, Manuscript No. JFMSH-24-31140; **Editor assigned:** 08-Feb-2024, PreQC No. JFMSH-24-31140 (PQ); **Reviewed:** 22-Feb-2024, QC No. JFMSH-24-31140; **Revised:** 29-Feb-2024, Manuscript No. JFMSH-24-31140 (R); **Published:** 07-Mar-2024, DOI: 10.35248/2476-2059.24.9.269.

Citation: Samaeul A (2024) An Overview on Advances in Food Hygiene Technology. J Food Microbial Saf Hyg. 9:269.

technology hold tremendous ability for enhancing food safety standards and reducing the risk of foodborne illness. By leveraging innovative solutions such as rapid pathogen detection methods, smart sensors and monitoring systems, and novel sanitation techniques, we can build a more resilient and sustainable food system that prioritizes the health and well-being of consumers worldwide. Let us embrace the opportunities presented by technology to propel us towards a future where safe and wholesome food is accessible to all.