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Evolution of molecular methods for microbial detection in seafood

Marisa Manzano
Department of Food Science, University of Udine, Italy

The introduction of molecular techniques in biotechnology has supplied new approaches that could be applied for a quick and specific detection of pathogens. Since, one of the major concerns in seafood is the presence of pathogenic microorganisms, the absence of bacteria such as *Salmonella, Vibrio cholerae, V. parahaemolyticus* and *Listeria monocytogenes* has to be granted in sea food. High quality and safety levels are required by the market to ensure that no outbreaks can affect humans health by consumption of seafood. Testing of raw material and/or final products for the presence of these pathogens using classical plate methods is time consuming and laborious. Rapid DNA based methods developed last few decades facilitate specific detection of pathogens. Techniques based on nucleic acid amplification such as PCR and qPCR showed very high sensitivity and specificity. Other techniques based on DNA hybridization can use specific labelled DNA probes, short stretches of nucleotides complementary to the target sequences, to detect quickly pathogens. In recent years, biosensors (biological components that bind or react with a target molecule and transduce this into a decetable signal) played an important role for food analysis and safety improving seafood quality. Electrochemical biosensors, optical biosensors, and acoustic biosensors have been used, due to the high sensitivity and specificity obtained. Biosensors are attractive because they can be easily used by non-specialist personnel and they allow accurate determination. they show the advantage to require tiny volumes, and to shorten the detection time which is a critical parameter for food industry in preventing food-related illnesses.

Biography

Marisa graduated in Natural Sciences at the University of Padua in 1983. Researcher at the University of Udine, Department of Food Sciences from 1990 to 2005, and Associate Professor of Molecular Biology Techniques from 2005 ongoing. Member of various Academic Comittee and Commissions. Author of a patent for the detection of *Listeria monocytogenes* in organic fluids by PCR (1996, C12Q). Coauthor/author of 111 papers; 8 book chapters; 62 papers/abstracts in proceedings, and 46 posters. Chairman and invited speaker at International workshops and conferences. Research fields: Development of DNA probes for pathogen detection using molecular methods methods (PCR, RT-PCR, DNA array) and biosensors.

marisa.manzano@uniud.it