

Fast detection of *Listeria monocytogenes* through a nanohybrid quantum dot complex

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Listeria monocytogenes is a recognized foodborne pathogen that causes listeriosis in susceptible consumers. Currently, the detection systems for *Listeria* in food detect live and dead bacteria, being the viable microorganisms most relevant for their ability to cause sickness in the population at risk.

For this reason, a new nanohybrid compound was developed for the optical detection of *Listeria* that was based on polyamidoamine dendrimers functionalized with an auxotrophic cofactor (lipoic acid), together with the coupling of fluorescent semiconductor crystals (quantum dots). The nanohybrid sensor has a detection limit for viable *L. monocytogenes* of 5.19×10^3 colony-forming units per milliliter under epifluorescence microscopy. It was specific when used among other pathogens commonly found in food. © 2017, Springer-Verlag GmbH Germany.

Dendrimers

Listeria monocytogenes

Optical detection

Quantum dots

Dendrimers

Diseases

Food microbiology

Nanocrystals

Nanostructured materials

Pathogens

Semiconductor quantum dots

Colony forming units

Detection limits

Epifluorescence microscopy

Fluorescent semiconductors

Food-borne pathogens

Listeria monocytogenes

Optical detection

Polyamidoamine dendrimers

Listeria

antiinfective agent

cadmium derivative

cadmium telluride

quantum dot

tellurium

bioassay

chemistry

drug effect

food contamination

food control

isolation and purification

Listeria monocytogenes

procedures

standards

Anti-Bacterial Agents

Biological Assay

Cadmium Compounds

Food Contamination

Food Microbiology

Listeria monocytogenes

Quantum Dots

Tellurium