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Spore germination based sensor-An innovative approach for monitoring food safety

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Food safety standards based on risk analysis has become bench mark in global trade in view of enhanced consumers awareness linked with diseases and public health. The current conventional tools for contaminants monitoring are time consuming and need innovative interventions for their surveillance during production and processing stages in supply chain. The dormant bacterial spores having unique ability to sense environmental changes in response to specific "germinant" and their transformation into growing vegetative cells in real time have enormous scope for their application in biosensing of contaminants in food products . The spore germination concepts involved the release of DPA / or marker enzymes and their action on specific chromogenic / or fluorogenic substrates as a mean for detection of contaminants in dairy foods. Such successful attempts were made to target antibiotic residues (1479/DEL/2006), aflatoxin M1 (3064/DEL/2010) and pesticide residues in milk. Spore–enzyme-sensors were also developed for *Enterococci* (119/DEL/2012), *Listeria monocytogenes* (IPR/FA/12037-L/2012) and *E.coli* in milk after preenrichment in selective liquid medium. The developed spore based analytical devices are cost effective, robust and one such product on antibiotic residues as MDR test kit has been commercialized for its application at farm levels / or manufacturing stage for mass screening of contaminants in dairy supply chain in our country .

Biography

Naresh Kumar is doctorate in Dairy Microbiology from National Dairy Research Institute (ICAR), and is currently working as Principal Scientist from last one decade in the area of food safety & biosensor development. He has significant contribution in the specialized field of Quality assurance and has filed 5 patents. He has published more than 20 research papers in reputed journals and 50 oral presentations in various national and international conferences and workshops. He is currently member of Biological hazards & task force for development of microbiological standards for milk products under FSSAI, Indian National Committee (INC) on IDF, food Hygiene, Safety management and other systems sectional committee, FAD 15 (BIS), Institute Technology Management Unit & HACCP team expert member at NDRI.

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