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Spore based colorimetric assay for monitoring antibiotic residues in milk

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Food safety has been a matter of great concern to the food industry, regulatory bodies and the consumers. Hence ensuring the quality and safety of dairy products offered to the consumers is mandatory objective of the dairy industry. Rapid detection of antibiotic residues in milk is of immense importance to the dairy industry. However existing methods are having one or more limitations in terms of precision, accuracy, sensitivity, cost and infrastructural requirement. Spores based biosensors detection systems are cost effective, rapid, and easy to perform and require almost negligible infrastructural facilities. Bacterial spore as bio-recognition element has been proved useful in targeting microbial and non-microbial contaminants in milk this characteristic can be effectively used. A novel Spore -Enzyme-Substrate Based Colorimetric Assay has been developed based on specific marker protein (s) released during spore germination which act upon specific substrate and release of color component which can be observed visually in the absence of analyte (i.e.antibiotics) within 2.0-2.15 hrs. While in the presence of analyte no color change is observed. The developed spore based assay can contribute immensely in dairy industry for routine monitoring of antibiotics residues in milk to comply national /global regulatory standards set by FSSAI/codex alimentarious commission after its further validation.

Biography

Alia Khan is pursuing her PhD in Microbiology, in Microbial biosensor and Food safety laboratory, Department of Microbiology, National Dairy Research Institute, India on "Development of enzyme spore sensor for monitoring of antibiotic residues in milk." under the supervision of Naresh Kumar, Principal Scientist. She has developed one farm level kit named as Microbial Drug Residue Test for the detection of antibiotic residues in milk. Her industrial career includes Microbiologist / Hygiene Officer in Modern Dairies Limited, Shamgarh ,Karnal Haryana India, where she was assigned responsibility for all microbiological analysis (spoilage and pathogenic), line testing during product manufacturing, hygiene monitoring in plant, report preparation and reporting to the quality control manager. In her MSc research project she has developed an assay for the detection of coliforms in milk using bacterial spores. This work was appreciated by various researcher in National Seminar held at NDRI Karnal and awarded with second prize in poster presentation.

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