

Application of biosensor in evaluation of food quality

Santosh Chopde, Nilkanth Pawar and Mahesh Deshmukh

College of Dairy Technology, India

In recent years as consumer demand traceability and legislation and accountability in the food chain distribution has increased, the need for rapid and verifiable methods of food quality assurance has grown rapidly. Conventional analysis methods for non-biological contaminants include high pressure liquid chromatography (HPLC), liquid chromatography (LC) and gas chromatography (GC) in combination with different detection techniques and enzyme linked immune sorbent assays (ELISA). Because of their sophisticated instrumentation they cannot be applied on in-line monitoring and involves complex, laborious sample pre-treatment technique. Nowadays, sensing technologies for food analysis including optical, chromatographic, calorimetric, etc. are employed. Although biosensors are not commonly used for food microbial analysis, they have great potential for the detection of microbial pathogens and their toxins in food. They enable fast or real-time detection, portability, and multipathogen detection for both field and laboratory analysis. Biosensors have several potential advantages over other methods of analysis, including sensitivity in the range of ng/mL for microbial toxins and <100 cfu/mL for bacteria. Fast or real-time detection can provide almost immediate interactive information about the sample tested, enabling users to take corrective measures before consumption or further contamination can occur. Miniaturization of biosensors enables biosensor integration into various food production equipment and machinery. Potential uses of biosensors for food microbiology include online process microbial monitoring to provide real-time information in food production. Biosensors can also be integrated into Hazard Analysis and Critical Control Point programs, enabling critical microbial analysis of the entire food manufacturing process.

Biography

Santosh Chopde has completed M.Tech. (Dairy Engineering) from NDRI, Karnal (India) and he is presently working as an Assistant Professor at College of Dairy Technology, Udgir.

santosh.der@gmail.com