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International Conference and Exhibition on
Food Processing & Technology

November 22-24, 2012   Hyderabad International Convention Centre, India

Application of biosensors in detection of food borne pathogens

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Food analysis has become a very important and interesting area of research because of the rapid expansion of food trade and highly increased mobility of today's populations. Food quality control is essential both for consumer protection and the food industry. Application of biosensors in the field of food analysis is promising for the detection of food borne pathogens. A biosensor is an analytical device, which converts a biological response into an electrical signal. It consists of two main components: a bioreceptor or biorecognition element, which recognizes the target analyte and a transducer, for converting the recognized event into a measurable electrical signal. Biosensors were developed to improve the sensitivity and selectivity of detection techniques for food borne pathogens and are also found to be rapid, reliable, effective and suitable for in situ analysis. As the safety in the food supply becomes critical due to the increased awareness among consumers and competitive nature of food industries, the demand for rapid, low volume and sensitive biosensor devices has dramatically increased. At present, few biosensors systems are available commercially such as Biacore, Spreeta™ , Reichert SR 7000, Analyte 2000, RAPTOR etc. As concerns regarding safe food and water supply increases, the demand for rapid detecting biosensors will also increase.

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The fact and fate of heavy metal residues in meat and meat products

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Heavy Metals are those elements which have metallic density more than 5 g/cm3, atomic weight 63.546 to 200.590 and specific gravity greater than 4.0 (viz., cadmium, mercury, lead, copper, zinc, iron, chromium and manganese etc.). Foodstuffs grown on contaminated soil or irrigated with impure water accumulate metal contents and are a big source of heavy metals exposure to the animals. Food animals reared on contaminated fodder become continuous source of heavy metal residues in most of the edible tissues especially in meat. These metals are toxic in nature and even at relatively low concentrations can cause adverse effects to the consumer health including cadmium carcinogenic, lead toxicity cause mutation anemia and colic. Mercury (Hg) causes neurological syndrome, arsenic to skin abnormalities, neurotoxin effects, chronic respiratory diseases, dementia, cognitive impairment, hearing loss and cardiovascular disease and so on. We can minimize the heavy metal toxicity by proper effluent management, irrigation of crops with clean water, avoiding the animal to graze around the industrial area and providing clean water for animal as drinking purpose. The identification of these metals by the process like atomic absorption spectrophotometry can easily be performed and judge the meat quality. The meat, heavily residue with these kinds of metals should be avoided and indicated as condemned to secure the consumer health.

Biography

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J Food Process Technol 2012
ISSN: 2157-7110, JFPT an open access journal

Food Technology-2012
November 22-24, 2012

Volume 3 Issue 10
Page 111