

Rapid Automated Microbiology

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Rapid microbiological methods for the evaluation of food samples have become more important in recent years due to increasing needs and attention in the area of food safety evaluation. This session dealt with various procedures and instruments which can assist in rapid sample preparation, rapid microbial enumerations, simple alternative methods for viable cell counts, tests for sanitation checks; and estimation of bacteria in meat samples. Many of the techniques displayed could be used for research or day-to-day testing.

The participants in the workshops had the opportunity to actually try many new microbiological procedures. The area of sanitation checks was of most interest to the participants. Procedures demonstrated included using sterile tape to lift microorganisms from a surface and transfer to an agar plate and using hydrogen peroxide to monitor the presence of residual catalase. The participants were most eager to learn about the different tape methods to monitor sanitation.

Most microbiologists are familiar with the catalase test. A 3% solution of hydrogen peroxide (H_2O_2) is used to test for the presence of catalase. If catalase is present, oxygen bubbles

will be formed. This same principle can be used to check the cleanliness of a piece of equipment. Meat naturally contains catalase. After a surface is cleaned, it can be flooded with 3% H_2O_2 . If bubbles form, the surface was not clean. This simple test can also be used to check if microorganisms are present in a product such as hamburger. A 1/4 teaspoon of ground beef is heated 2 min at 65°C to inactivate bovine catalase. The sample is cooled to 21°C and covered with H_2O_2 . The amount of O_2 liberated is proportional to the number of microorganisms present since microbial catalase is not inactivated at 65°C.

Many of the prepared microbiological supplies now available which take the place of traditional agar and petri plates were demonstrated. These procedures are not rapid, but add a convenience of not having to be prepared in the laboratory. Participants felt the most important issues were cost, easiness to use and rapidness. The participants shared with each other the pro's and con's they have found using rapid procedures to detect the presence of pathogens in food products.

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