

Assessment of Microbial Load in Food Samples

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ABSTRACT: Introduction: Microbiological analysis covers the use of biological, biochemical or chemical methods for the detection, identification or enumeration of Microorganisms. It is often applied to disease causing and spoilage microorganisms.

Aim and Objective: To assess the Microbial load in food samples when 0-8 hrs of using bioluminescent.

Materials and Methods: The freshly prepared food samples on Solid and Liquid, Solid- idly, Liquid-Mosambi juice and Hygiena bioluminescent ultra snap.

Result and Conclusion: In the interval of time, there is an increase in microbial load in food samples. Certain food samples have certain time to be taken, thus as time increases food gets spoiled and microbial load in food samples also increases.

Keywords: Novel Method, Bioluminescent, Solid Food, Hygiena, Ultra Snap, Innovative Technique.

1. INTRODUCTION

Microbial activity analysis is a biological biochemical methods for detection, identification of Microorganisms in food, Food substance consisting essentially of protein, carbohydrates, fat and other nutrients used in the body of an organism to sustain growth and vital process and to furnish energy. Food industries require rapid microbiological methods, whereas Adenosine triphosphate (ATP) assay is a fast and sensitive alternative, traditional microbiological analysis of food and beverages are slow, applications of ATP assay to many

branches of food industry's are presented.(1).

Traditional detection methods available for microbial analysis of food are time consuming and are not sufficiently sensitive to meet food industries requirements as rapidly, on site applicability and cost effectiveness.(2). Among the more recent and the introduction of rapid methods for detection of microorganisms in food, where adenosine triphosphate (ATP) bioluminescence is very suitable for on line monitoring of bacterial contamination in food and beverages due to no need for

culturing step on large equipment to fulfill the measured rapidly and sensitivity.(3). Food business have become widespread in recent times, in response to changing lifestyle and food consumption. Deliberate or accidental contamination of food during large production might endanger the health of consumers.(4). Our team has extensive knowledge and research experience that has translate into high quality publications (5–14))(15–24))

The Bioluminescence test is a rapid method for quantification of living cells based on the detection of molecules adenosine triphosphate or ATP.It is simple, highly sensitive,cost effective,rapid (compared to conventional methods which take days) and provides real times results within minutes.(25). It saves water used for rinsing and optimizes sanitizer use.ATP plays a critical role in the transport of

macromolecules such as proteins and lipids into and out of the cell.Thus, in this study we will know about the microbial load in food samples on interval of time using bioluminescent.(25,26).

2. MATERIALS AND METHODS

Solid,Liquid- fresh food,Hygiena bioluminescent ultrasnap. Freshly prepared food samples of solid and liquid have been taken. Then by taking the swab of food using bioluminescent for every 1 hour and continuing this process for nearly 8 hrs to assess the microbial load in the food sample (Figure 1). After taking the swab in the stick, break the stick and squeeze and shake the liquid. Now,by placing it in bioluminescence, the increase in microbes has been detected in 25 seconds for each and every hour.



Figure 1: Analysis of microbial load in liquid medium

3. RESULT AND DISCUSSION

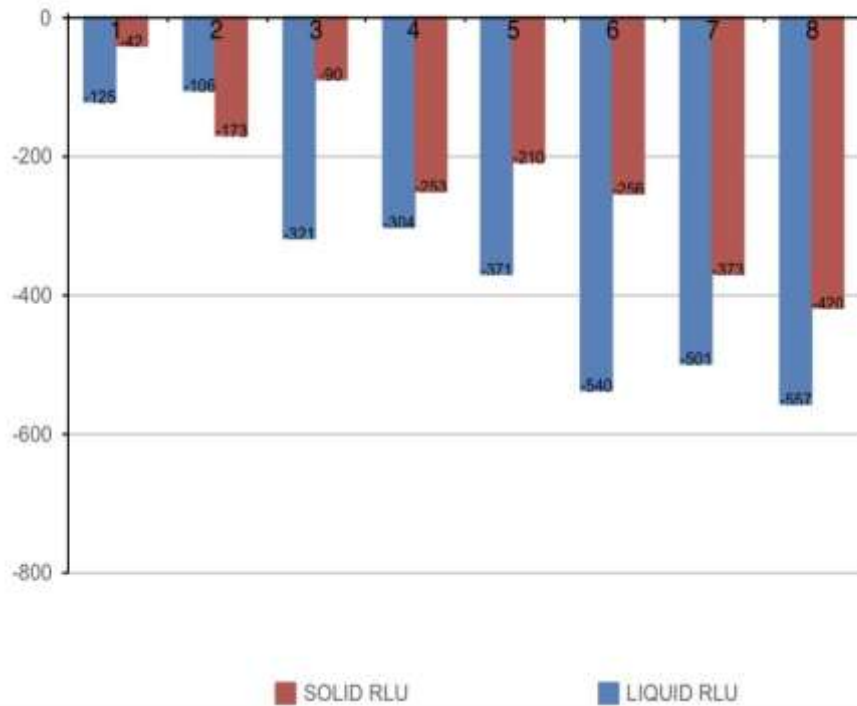


Figure 2 : Graph showing the microbial fluid of solid and liquid foods.

The microbial load has increased in the food sample for each hour but in liquid there is slight drop in Microbial growth because as time increases the liquid get fermented and it restricts the growth of microbes (Figure 1). .The ATP bioluminescent assay os very rapid but not very specific. The bacterial luminescent assays are rapid fast enough for near on line assays that require immediate actions.The method is simple enough to use so that workers could perform the test.The results of this study indicates hygienic qualities of the freshly prepared food.(27). Our team has extensive knowledge and research experience that has translate into high quality publications (28), (29), (30), (31), (32,33), (34), (35), (36), (37), (38), (39), (40), (41).

Bioluminescent gives the value of increase in microbial load and gives result in just 15 seconds but, the main limitation of this study is bioluminescent does not denote

which microbes it contain.And the concentration of microbial load decreased at 4 - 7 hrs due to fermentation of liquid food stuff (42).

4. CONCLUSION

There is no significant change in microbial load of food sample. This can be done on a large scale by taking food samples from hospitals,malls and Hotels etc. Similarly, this can be done for prolonged duration.

Conflict of Interest :

The authors hereby declare that there is no conflict of interest in this study.

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Author Contribution :

A) S.Sharmela Lakshmi - contributed in designing the study, execution of the project, statistical analysis, manuscript drafting.

B) Dr. Jayalakshmi - contributed in designing the study, execution of the project, statistical analysis, manuscript drafting.

C) Dr.V.Vishnupriya - contributed in study design, guiding the research work, manuscript correction.

D) Dr. Gayathri R - study design, statistical analysis, manuscript proofreading and correction.

E) Dr. Kavitha S - study design, statistical analysis, manuscript proofreading and correction.

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