Official Event Report: Department of MLT Workshop

Title: One-Day Hands-On Training Workshop on "Role of Catalase and Coagulase Tests in the Isolation & Identification of Bacterial Pathogens"

Organized By: Department of Medical Laboratory Technology (MLT), Swami Vivekananda University

Date: 11th February 2026, Wednesday

Resource Person: Mr. Rupak Bera (Faculty, Dept. of MLT)

Venue: SVU Campus, Barrackpore

Event Summary

The Department of Medical Laboratory Technology (MLT) at Swami Vivekananda University successfully organized a One-Day Hands-On Training Workshop titled **"Role of Catalase and Coagulase Tests in the Isolation & Identification of Bacterial Pathogens."** Held on February 11, 2026, this event was meticulously designed to empower MLT students with advanced diagnostic skills.

The primary objective of the workshop was to bridge the critical gap between theoretical microbiology concepts and their practical applications in a clinical laboratory setting. By focusing on two of the most fundamental biochemical tests—Catalase and Coagulase—the session provided students with the essential know-how to accurately differentiate between medically significant bacterial genera, specifically distinguishing *Staphylococcus* species from *Streptococcus* species.

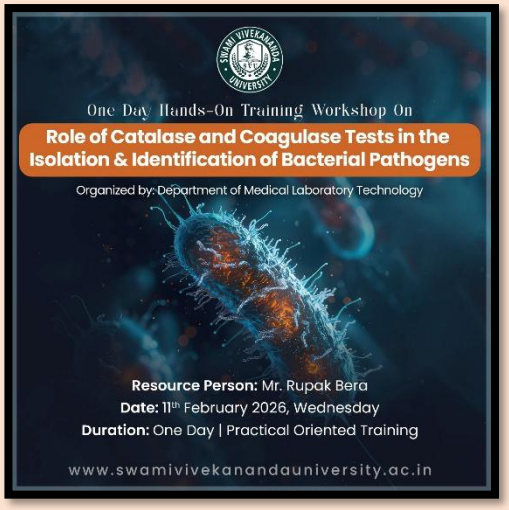
The workshop provided a unique platform for students to move beyond textbooks and engage directly with live bacterial cultures. Under the expert guidance of the faculty, participants learned to interpret biochemical reactions—such as bubble formation and plasma clumping—which are pivotal for rapid and accurate disease diagnosis in real-world healthcare scenarios.

Resource Person Mr. Rupak Bera demonstrating the critical steps of the slide method, ensuring students grasp the practical nuances of bacterial identification

Session highlights

1. Introduction

The Department of Medical Laboratory Technology (MLT) at Swami Vivekananda University organized a comprehensive one-day hands-on training workshop aimed at enhancing the practical skills of students in the field of clinical microbiology. The workshop, titled **"Role of Catalase and Coagulase Tests in the Isolation & Identification of Bacterial Pathogens,"** focused on the critical biochemical tests used to differentiate between major bacterial groups, specifically *Staphylococci* and *Streptococci*.



Official Flyer of the Workshop

2. Inauguration & Theoretical Session

The session commenced with an in-depth theoretical lecture delivered by the resource person, **Mr. Rupak Bera**. Utilizing the university's smart classroom facilities, Mr. Bera explained the biochemical basis of the catalase and coagulase enzymes. He highlighted how these enzymatic reactions serve as the "gold standard" in diagnostic laboratories for identifying pathogenic bacteria.

Mr. Rupak Bera explaining the biochemical pathways using the smart board

Key topics covered included:

- The principle of the catalase test (breakdown of hydrogen peroxide).
- The mechanism of the coagulase test (conversion of fibrinogen to fibrin).
- Clinical significance in distinguishing *Staphylococcus aureus* from other species.

3. Faculty Demonstration: Techniques & Safety

Live demonstration of the slide test method under aseptic conditions

Following the theory session, the workshop transitioned to the laboratory. Mr. Rupak Bera demonstrated the correct procedures for performing the tests under strict aseptic conditions. Students observed the **slide method** and **tube method** for the coagulase test. The demonstration emphasized the importance of laboratory safety, proper sterilization using Bunsen burners, and the handling of bioactive cultures.

4. Student Hands-On Participation

The core objective of the workshop was "learning by doing." Students were given the opportunity to handle bacterial cultures personally. Under faculty supervision, they performed:

- **Sub-culturing:** Transferring bacterial colonies to fresh media.
- **Plate Handling:** Observing growth patterns on blood agar and nutrient agar plates.
- **Interpretation:** Differentiating between hemolytic and non-hemolytic colonies.

This segment allowed students to bridge the gap between textbook knowledge and real-world diagnostic procedures.

A student analyzing colony characteristics on a blood agar plate.

5. Critical Analysis of Results & Interpretation

The workshop concluded with a rigorous evaluation of the experimental outcomes, where students actively engaged in interpreting the biochemical reactions under faculty supervision.

- **Catalase Test Observation:** Students performed the confirmatory test by adding hydrogen peroxide (H_2O_2) to the bacterial isolates. They observed the immediate formation of effervescent oxygen bubbles, a positive indication of catalase enzyme activity. This reaction effectively demonstrated how to differentiate *Staphylococcus* species (catalase positive) from *Streptococcus* species (catalase negative).

Observation of bacterial subcultures and reaction results on the plates

- **Coagulase Test Findings:** For the identification of pathogenic *Staphylococcus aureus*, students examined the slide test results. The distinct clumping or agglutination of the plasma was recorded as a positive result, signifying the conversion of fibrinogen to fibrin by the bacterial enzyme coagulase.
- **Evaluation of Culture Media:** The session also involved a detailed inspection of the streak plates. The well-isolated colonies observed on the blood agar and nutrient agar plates confirmed the success of the streak-plate technique. Students further analyzed the blood agar plates for signs of hemolysis (clearing around colonies), learning to correlate colony morphology with bacterial pathogenicity.

6. Conclusion

The one-day hands-on training workshop was a resounding success, marked by the enthusiastic and active participation of the MLT students. Beyond just a learning session, it served as a transformative platform for students to bridge the gap between theoretical knowledge and practical application. By personally performing the catalase and coagulase tests, participants gained invaluable confidence in sterile handling and microbiological analysis—skills that are indispensable for their future careers in high-precision medical diagnostics.

Students and faculty of the Dept. of MLT at the conclusion of the workshop

The interactive nature of the workshop fostered a spirit of inquiry and collaboration, aligning perfectly with Swami Vivekananda University's mission to produce skilled, industry-ready professionals. The event concluded with a vibrant group photograph, capturing the collective academic spirit and the shared satisfaction of a day dedicated to skill enhancement and professional growth.

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