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P1: Salmonella Rapid Test (SRT)

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The Oxoid Salmonella Rapid Test is for the presumptive detection of motile Salmonella in food material and environmental samples.

Principle

Pre-enrichment of a homogeneous sample in suitable medium is followed by inoculation of culture vessel containing a salmonella elective medium and two tubes containing selective medium and upper indicator medium separated by a porous partition. Salmonella migrate actively through the lower selective media to the upper indicator media where their presence is indicated by a colour change.

Components of the kit

Each culture vessel contains two tubes

Tube A: (Blue cap)- contains Modified Rappaport Vassiliadis Medium as the selective medium and Modified Lysine-Iron-Cystine-Neutral Red (LICNR) Medium as the indicator medium

Tube B: (Red cap)- contains Modified Lysine-Iron –Desoxycholate Medium as the selective medium and Modified Brilliant Green Medium as the indicator medium.

Novobiocin Discs- Each disc containing 1.8 mg Novobiocin

Preparation of the test material

Test samples are pre-enriched in a suitable medium by homogenizing 25g of the sample in 225ml of the medium (Lactose Broth, Nutrient Broth or Buffered Peptone water). Incubate at 37°C for 18-24 h.

Preparation of the culture vessel

Use good microbiological techniques throughout. Each vessel must be prepared before preparing a second one.

1. Tap the culture vessel at an angle to loosen any compacted media. Unscrew the lid of the culture vessel.
2. Add sterile distilled water up to the lower line marked on the side of the culture vessel (approximately 27ml). Check that the base of both the tubes are below the level of the liquid.
3. Leaving the needle in its safety sheath attach it to the syringe. Remove the safety sheath and carefully push the needle into the central well in the top of the blue cap tube (Tube A) ensuring that the needle is visible below the cap. Smoothly withdraw the syringe plunger until the liquid level in the tube reaches the line marked on the culture tube. The rate of withdrawal should be such that approximately 5sec is taken for the operation. Remove the syringe and needle and replace the sheath. Take care that the tube is not taken from its position in the container and that the tube cap is not loosened.
4. Repeat the above step for Tube B with the red cap.
5. Replace the culture vessel lid. Press the side of the culture vessel containing the two tubes firmly to a vortex mixer and mix. It is important that the liquids in the culture tubes are vigorously agitated for about 5 sec. After mixing, leave the container to stand for about 5min. (It is now possible to leave the vessel for up to 4h before use.)

6. Carefully remove the culture vessel lid. Pour sterile cooled Salmonella Rapid Test Elective Medium (SRTEM) into the culture vessel until the level reaches the upper line on the culture vessel.

7. Aseptically add one Novobiocin disc into the culture vessel. Take care that the culture vessel is maintained in an upright position throughout the remainder of the test.

8. Use the spanner provided to remove the red and blue caps from the tubes. Avoid touching by hand either the tubes or the inner surface of the culture vessel. Discard the blue and red caps.

9. Replace the culture vessel lid. The culture vessel is now ready for use.

10. The inoculated pre-enrichment culture is shaken and allowed to stand until the coarse particles have settled.

11. Record the sample identification on one of the labels provided and attach the label to the culture vessel.

12. Remove the culture vessel lid and add one ml of the pre-enrichment culture to the prepared culture vessel container.

13. Replace the lid on the culture vessel container.

14. Place the culture vessel in an incubator controlled at 41 ± 0.5°C and incubate for 24h. The culture vessel must be kept in an upright position all the time.

Reading and interpretation

1. After 24h incubation, remove the culture vessel from the incubator and in good light examine the upper indicator sections of the tubes for colour changes. Examine the tubes through the container wall. Do not remove the remove the tubes from the container.

2. The possible presence of salmonella is shown by a change in the colour of the upper indicator media in either one or both the tubes.

   Positive : Tube A- any degree of black colouration

   Tube B – any degree of red or black colouration

   Negative : Tube A- Absence of black colouration

   Tube B- Absence of red or black colouration

3. Tubes which produce positive reactions must be tested with the Oxoid Salmonella Latex Test. Those giving positive results in the Salmonella Latex Test may be reported as presumptively containing salmonella. Results should be confirmed using additional culture and serological techniques, by sub culturing through selective enrichment from the indicator layer in the tube positive latex test results.

Sensitivity

The method was found to be sensitive up to 96% compared to 90% by the traditional method in studies carried out.

Limitations

This method is not appropriate for the detection of non-motile strains of salmonella (incidence: 0.1%). Salmonella growth in this system may be inhibited at or above 43°C. The system is designed to be compatible with the Oxoid Salmonella Latex Test.

Salmonella Latex Test

The kit contains

1. Test Latex- Latex particles sensitized with polyvalent Salmonella antibodies (rabbit IgG)

2. Control Latex- Latex particles sensitized with normal rabbit serum globulin

3. Positive control- A suspension of non-viable Salmonella preserved with 1% formalin

4. Test cards

Only use this latex test in conjunction with the Oxoid Salmonella Rapid Test.

Method: Take a sample from the upper indicator media using a platinum loop. If one tube is indicator positive, perform the latex test on that.

If both the tubes are indicator positive, use Tube A first for testing. Only use Tube B if Tube A is Latex Test negative.

Dispense one free falling drop of the test latex onto one of the reaction sites on the test card. Dispense one free falling drop of the control latex onto an adjacent reaction site on the test card. Using a sterile loop, remove a loopful of culture from the indicator layer and mix it with test latex drop. Continue mixing with the loop for 10-15 secs. Flame the loop and cool and remove a second loopful of culture from the same tube. Mix this with the control latex on the test card. Continue mixing for 10-15 secs. Gently rock the card in a circular motion for up to 2 min and observe for agglutination. Agglutination of the test latex within 2 min considered as positive if there is no agglutination of the control latex within 2 min. In some cases agglutination may be observed in the test and control latex. Such results should be regarded as non-interpretable, and samples from the upper indicator layer should be tested by standard cultural and biochemical procedures. The positive control suspension should be used to check the correct working of the reagent.