Salmonella Latex Agglutination Test

Cat. No.: DLAT1001
Pkg. Size: 50T

Intended use

The Salmonella Latex Agglutination Test is a latex slide agglutination test for the confirmatory identification of presumptive Salmonella colonies from selective agar plates. Salmonella Latex Kit detects >99% of motile Salmonella species and early investigations have indicated that specific non-motile species may also be detected.

General Description

Salmonella is a genus of rod-shaped, Gram-negative, non-spore-forming, predominantly motile enterobacteria with diameters around 0.7 to 1.5 µm, lengths from 2 to 5 µm, and flagella that grade in all directions (i.e., peritrichous). They are chemoorganotrophs, obtaining their energy from oxidation and reduction reactions using organic sources, and are facultative anaerobes. Most species produce hydrogen sulfide, which can readily be detected by growing them on media containing ferrous sulfate, such as TSI. Most isolates exist in two phases: a motile phase I and a nonmotile phase II. Cultures that are nonmotile upon primary culture may be switched to the motile phase using a Cragie tube. Salmonella is closely related to the Escherichia genus and are found worldwide in cold- and warm-blooded animals (including humans), and in the environment. They cause illnesses such as typhoid fever, paratyphoid fever, and foodborne illness.

Principle Of The Test

Latex particles are coated with polyvalent antiserum raised against a wide range of Salmonella antigens. When mixed with a suspension of Salmonella organisms, the latex particles rapidly agglutinate to form visible clumps.

Reagents And Materials Provided

1. Salmonella Latex Reagent: 2.5mL
   Latex particles coated with rabbit antiserum against Salmonella antigens. Preserved with 0.099% sodium azide. (Blue cap)
2. Positive Control: 0.5mL
   Inactivated preparation of Salmonella antigens preserved with 0.099% sodium azide. (Black cap)
3. 0.85% Isotonic Saline: 5.0mL
   Preserved with 0.099% sodium azide. (White cap)
4. Instructions for Use
5. Disposable agglutination slides
6. Disposable mixing sticks

Materials Required But Not Supplied

1. Bacteriological loops
2. Pasteur pipettes

Storage

The kit should be stored at 2-8 °C when not in use. The kit should not be used after the expiry date printed on the carton label.
## Specimen Collection And Handling

Colonies grown on selective agar plates.

### Assay Steps

1. Dispense 1 drop of Isotonic Saline into a circle of a agglutination slide.
2. Using an inoculating loop, remove a colony from the selective agar plate and emulsify the colony in the drop of saline to produce a heavy smooth suspension. Suspensions should only be made from colonies with morphologies resembling Salmonella spp.
3. Rock the slide gently for up to 2 minutes and observe for auto-agglutination or clumping. If the suspension remains smooth, proceed to Step 4.
4. Mix the Salmonella latex by gently inverting and add one drop next to the bacterial suspension. Do not allow the dropper to touch the suspension.
5. Mix the latex reagent and the bacterial suspension with a clean mixing stick and rock the slide gently two or three times. Excessive rocking of the slide is not necessary. Examine for agglutination within a maximum of 2 minutes.
6. After reading, discard the used mixing sticks and slides into suitable disinfectant.

### Quality Control

The following controls should be performed each time the kit is used.

1. **Reagent Control:** Add one drop of Salmonella latex to one drop of Saline Solution in the same circle on a slide. Mix and spread the liquid over the entire area of the circle with a mixing stick. Rock the slide gently for 2 minutes and observe for agglutination. If any agglutination is seen, either the latex or the saline is contaminated and should be discarded.
2. **Positive Control:** Add one drop of positive control to one circle on the test slide. Add one drop of Salmonella latex to the same circle and mix. Do not allow the dropper to touch the positive control. Rock the slide gently. Within 2 minutes, agglutination, indicating a positive result, should be visible. If no agglutination is seen, a fresh kit should be used.

### Interpretation of Results

Agglutination within 2 minutes is a positive result and indicates the presence of Salmonella in the sample. Absence of agglutination indicates that Salmonella is not present in the test culture.

### Sensitivity

99.30%

### Specificity

100%

### Reproducibility

Intra-batch reproducibility was evaluated by testing sensitivity and specificity of 1 batch of product against serial dilutions of reference and kit control antigens, and a panel of 34 bacterial samples. Different operators carried out tests on 3 separate occasions. End-point titres obtained with reference/control antigens and qualitative results with the panel were identical in the three assays.

Inter-batch reproducibility was examined by testing sensitivity and specificity of 3 batches of product against serial dilutions of reference and kit control antigens, and a panel of 34 bacterial samples. Between the 3 batches, variation in end-point titres was minimal (1 doubling dilution) and qualitative results with the panel correlated 100%.
Precautions

Safety:
1. Sodium azide, which is used as a preservative in the kit reagents can react with lead or copper plumbing to form potentially explosive metal azides. Dispose by flushing with a large volume of water to prevent azide build-up.
2. Appropriate precautions should be taken when handling or disposing of potential pathogens. Decontamination of infectious material can be achieved with sodium hypochlorite at a final concentration of 3% for 30 minutes. Liquid waste containing acid must be neutralised before treatment.
3. The positive control has been inactivated during the manufacturing process. However, it should be handled as though potentially infectious.

Procedural:
1. This kit should be used according to the kit instructions.
2. Allow all reagents to reach room temperature before use.
3. Do not dilute any of the kit reagents.
4. Do not intermix reagents from different batches of kits.
5. Do not freeze any of the kit reagents.
6. Do not allow the latex reagent dropper to touch the positive control or bacterial samples.
7. Be careful only to record agglutination. Reactions that are “curdy” or “stringy” may not be true agglutination.
8. Ensure the slide is clean and dry prior to use.

Limitations
1. Results should be interpreted in the context of all available clinical and laboratory information.
2. Rough strains of Salmonella are known to cause non-specific auto-agglutination in saline alone and therefore cannot be tested with this kit.
3. Some non-motile strains may not be detected by this kit.
4. Some oxidase-positive organisms may give false positive reactions.
5. Old stock cultures of Enterobacteriaceae on nutrient agar slopes may cause non-specific agglutination whereas old stocks of Salmonella may give false negative results. Fresh sub-cultures should be prepared for testing.
6. Identification with this kit is presumptive and all positive results should be confirmed by further identification tests and serotyping of pure cultures.