Schiff Reagent

S1516056

Storage: 2-8℃. Store in the dark.
Shipping: Shipped with ice packs.

Introduction:

Schiff Reagent is an effective aldehyde reagent discovered by Schiff in 1866. It is used for the detection of aldehyde groups (-CHO). The main component of Schiff Reagent is parafuchsin, a chloride salt of triaminotriphenylmethane. The quinone group in parafuchsin is responsible for its color development. When sulfurous acid or sulfite is added to an acidified fuchsin solution, fuchsin is reduced to fuchsin-sulfurous acid (leucofuchsin sulfonic acid), which is Schiff's reagent.

Schiff Reagent is mainly used for the staining of glycogen, mucous substances, and other structures. It is often used in combination with periodic acid. Periodic acid is a strong oxidizing agent that oxidizes the 1,2-glycol groups in carbohydrates and related compounds to form dialdehydes. The aldehydes react with Schiff Reagent to form a fuchsin-colored compound, producing a purplish red color. Freshly prepared Schiff Reagent is nearly colorless. It should be discarded if it turns yellow or pink. This reagent is for research use only. Not for clinical diagnosis or other purposes.

Materials Required:

1. 10% formalin fixative, distilled water, periodic acid solution, hematoxylin staining solution, acid ethanol differentiation solution.
2. Graded ethanol series, xylene or eco-friendly dewaxing and clearing agent.

Protocol (for reference only):

1. Routine fixation, typically with 10% formalin fixative, followed by routine dehydration and embedding.
2. Deparaffinize paraffin sections in xylene or dewaxing agent and transfer to distilled water; frozen sections go directly into distilled water.
3. Rinse in running tap water for 2–3 minutes, then immerse and wash twice in distilled water.
4. Place sections in periodic acid solution and incubate at room temperature for 5–8 minutes; generally not longer than 10 minutes.
5. Rinse once in tap water, then immerse and wash twice in distilled water.
6. Stain sections in Schiff's reagent in the dark at room temperature for 10–20 minutes, then rinse in running tap water for 10 minutes.
7. Stain nuclei in hematoxylin staining solution for 1–2 minutes, differentiate in acid ethanol differentiation solution for 2–5 seconds.

8. Rinse in running tap water for 10–15 minutes, then wash in distilled water to blue the nuclei.
9. Dehydrate through graded ethanol series, clear in xylene or dewaxing agent, and mount with neutral balsam.

Staining Results:

PAS-positive substances (glycogen or polysaccharides): Red or purplish red.

Negative Control (Optional):

1. Dissolve 1 g amylase in 100 ml PBS (pH 5.3), treat sections for 30–60 min, then incubate with other sections in periodic acid solution. The result should be negative.
2. (Alternative) Treat sections with filtered saliva for 30–60 min, then incubate with other sections in periodic acid solution. The result should be negative.
3. (Alternative) Use adjacent sections from the same sample. Incubate control sections directly in Schiff's reagent without periodic acid oxidation. The result should be negative.

Precautions:

1. Store Schiff's reagent at 4 °C in a tightly sealed container. Avoid prolonged exposure to light and air during use. The reaction is slow at room temperature below 15 °C; warm the reagent gently in water (< 30 °C) before use.
2. Fresh Schiff's reagent is nearly colorless. Slightly pink reagent may still be used, but obviously red reagent should be discarded.
3. Staining intensity largely depends on the incubation time in periodic acid solution and Schiff's reagent.
4. For your safety and health, wear laboratory coat and disposable gloves during operation.
5. Use the reagent promptly after opening to avoid affecting experimental results.