Fast Silver Stain Kit (10T)

Catalog#JKR23005-10T

Sufficient reagents for 10 assays per kit.
Store at 4°C

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1. Experimental Principle

Silver staining is used to detect proteins in polyacrylamide gels, based on the principle that silver ions are reduced to metallic silver in an alkaline pH environment, precipitating on the protein surface to produce color.

2. Kit Components

Component	Volume (10T)	Storage Temperature
Sensitization Solution I	36mL	4°C
Sensitization Solution II	0.8mL	4°C, protected from light
Sensitization Solution III	1.1mL	4°C, protected from light
Chromogenic Solution I	36mL	Room Temperature
Chromogenic Solution II	0.5mL	4°C, protected from light
Silver Solution	3.8mL	4°C, protected from light

Precautions:

- Due to the high sensitivity of silver staining, use high-purity water and ensure all utensils are extremely clean, preferably using clean glassware. Always wear gloves to avoid direct contact between skin and the gel.
- Prepare ethanol, acetic acid, and deionized water yourself.
- The silver solution is corrosive; handle with care, ensure proper protection to avoid direct contact with the body, and prevent corrosion of other items. It is toxic or harmful to aquatic life and must not be directly discharged into the environment.
- This product is restricted to scientific research use by professionals only, must not be used for clinical diagnosis or treatment, must not be used as food or drugs, and must not be stored in ordinary residences.
- For your safety and health, please wear a lab coat and disposable gloves when handling.

3. Operating Steps

1) Take an appropriate amount of sample and perform SDS-PAGE gel electrophoresis.
2) Fixation: Peel the gel after electrophoresis from the glass plate, rinse it clean with water, place it in a clean 12 cm diameter glass dish, add deionized water to cover the

gel, cover with a lid, shake at room temperature on a destaining shaker for 5 min, discard the deionized water, add fixation solution to cover the gel, cover with a lid, and shake at room temperature on a destaining shaker for 30 min.

Fixation solution preparation: Add 17.5 mL ethanol, 3.5 mL acetic acid, and 14 mL deionized water sequentially, mix well to obtain 35 mL fixation solution.

3) Sensitization: Discard the fixative, add deionized water to cover the gel, cover with lid, and wash at room temperature on a decolorizing shaker for 20 min, changing the water every 10 min for a total of two washes. Appropriately extending the wash time or increasing the number of washes slightly helps reduce staining background. Add sensitization solution to cover the gel, cover with lid, and shake at room temperature on a decolorizing shaker for 30 min.

Sensitization solution preparation: Add 3.5 mL sensitization solution I, 70 μL sensitization solution II, and 100 μL sensitization solution III to 31.5 mL deionized water, mix well before use, prepare fresh.

4) Staining: Discard the sensitizing solution, add deionized water to cover the gel, cover with lid, shake at room temperature on a destaining shaker for 2 min, repeat washing once, for a total of 2 times, add staining solution to cover the gel, cover with lid, shake at room temperature on a destaining shaker for 20 min.

Staining solution: Add 0.35 mL silver solution and 30 μL developing solution II to 35 mL pure water, mix well, prepare fresh before use.

5) Color development: Discard the staining solution, add deionized water to cover the gel, cover the lid, shake at room temperature on a destaining shaker for 1 min, repeat the water wash once, for a total of 2 times. Add color development solution to cover the gel, shake at room temperature on a destaining shaker for about 2 min until the solution turns cloudy. Discard the liquid, add fresh color development solution and continue developing until the target bands are clear, then photograph.

Color development solution: Add 3.5 mL of color development solution I and 15 μL of color development solution II to 31.5 mL of deionized water, mix well. Prepare fresh before use.

4. Frequently Asked Questions

Q1: Small dots or other non-protein marks appear on the gel, or the background is too dark:

1) The gel is not fully immersed in the solution. Ensure complete immersion by selecting an appropriately sized container and adding an adequate volume of the respective solutions, while maintaining proper agitation speed throughout the process.

2) The container used for silver staining was inadequately cleaned. Thoroughly wash the container with detergent, rinse it extensively with tap water, and finally rinse several times with high-purity water.

3) Fingerprints or other physical indentations. Always wear gloves to avoid direct skin contact. During handling, take care not to squeeze, fold, or rub the gel.

4) Contact with metal objects. Exposure to metal objects (e.g., metal tweezers) can cause non-specific staining. Excessive development time. Typically, the color development reaction is complete within 10 min ; overdevelopment will lead to an excessively dark background.

5) Inadequate washing. This may result from: insufficient washing time, an inadequate volume of wash buffer, an overly narrow container that impedes thorough mixing during agitation, or agitation that is too slow to achieve complete mixing.

GENE CREATE

WUHAN GENECREATE BIOLOGICAL ENGINEERING CO.,LTD.

Address： Wuhan Shengzhiyuan Biotechnology Innovation Industrial Park,
North Shendun 5 th Road, Jiangxia District, Wuhan City, Hubei Province.

Phone: 027-87960366

Email: marketing@genecreate.com

Website: www.genecreate.cn