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SYBR Green I Nucleic Acid Gel Stain

1 Contents

Cat. No.	Product Name	Package
HY-K1004	SYBR Green I Nucleic Acid Gel Stain (10,000 ×)	100 μL
HY-K1004	SYBR Green I Nucleic Acid Gel Stain (10,000 ×)	500 μL

2 General Information

SYBR Green I Nucleic Acid Gel Stain is one of the most sensitive stains available for detecting double-stranded DNA (dsDNA) in agarose and polyacrylamide gels. SYBR Green I stain is maximally excited at 490 nm and has secondary excitation peaks at 290 nm and 380 nm. The fluorescence emission of SYBR Green I stain bound to DNA is centered at 520 nm. The detection limit using SYBR Green I stain is as low as 60 pg per band of dsDNA using 300 nm transillumination. With 254 nm epi-illumination, as little as 20 pg of dsDNA can be detected. SYBR Green I stain is also possible to stain dsDNA prior to electrophoresis as it has an exceptionally high affinity for dsDNA.

SYBR Green I stain is more sensitive than ethidium bromide (EB), but less mutagenic than EB in Ames tests. The sensitivity for detecting single-stranded DNA and RNA is somewhat lower, making SYBR Green I stain ideal for detecting dsDNA in complex solutions, where ssDNA or RNA in the sample may obscure the results, such as apoptosis ladders. SYBR Green I stain is extremely versatile and easy to use. Gels can be simply stained in buffered dye solution with no destaining or wash steps.

3 Protocol

Staining DNA Before Electrophoresis

a. Precast agarose or nondenaturing polyacrylamide gels (0.8-3.0%) with SYBR Green I stain by diluting the SYBR Green I stock reagent 1:10,000 into the gel solution just prior to pouring the gel.

b. Mix SYBR Green I stain with 6× Loading Buffer at a ratio of 1:9 to get Loading Buffer pre-dye. Then mix the nucleic acid sample and marker with Loading Buffer pre-dye at a ratio of 5:1 respectively and incubate at room temperature for at least 3 minutes prior to electrophoresis.

Note: Loading Buffer containing SDS would affect the electrophoresis results. It is recommended to use a Loading Buffer without SDS.

c. After loading and electrophoresis, detect the bands under UV illuminator.

Staining DNA Following Electrophoresis

a. Perform electrophoresis on an agarose or nondenaturing polyacrylamide gel without SYBR Green I stain.

b. Dilute the stock SYBR Green I reagent with a buffer of pH 7.5-8.0 (such as TAE, TBE or TE) at a certain ratio (the ratio between dye and agarose gel is 1:10,000 or 2:10,000; the ratio between dye and polyacrylamide gel is 3:10,000 or 4:10,000) and gently shake to form a staining solution.

c. Cover the gel with staining solution in a plastic container and incubate at room temperature for 30–60 minutes with shaking. Protect the staining container from light by covering it with aluminum foil or placing it in the dark. Staining time varies depending on the thickness of the gel and the percentage of agarose or polyacrylamide.

d. Detect the bands under UV illuminator.

4 Storage condition

Store at -20°C 1 year

Protect from light

5 Precautions

1) Before opening, SYBR Green I stain must be warmed completely to room temperature to ensure that the DMSO is completely thawed and that the solution is homogeneous. To avoid losing stain, briefly centrifuge thawed stain in a microfuge to deposit the DMSO solution at the bottom of the vial.

2) Since SYBR Green I stain is very sensitive, the commercial DNA marker should be diluted about 5-10 times.

3) We recommend storing aqueous stain solutions in plastic rather than glass, as the stain may adsorb to glass surfaces.

4) The dye can be completely removed from the double-stranded nucleic acid during normal alcohol precipitation of the nucleic acid.

5) SYBR Green I stain does not interfere with many enzymes used in molecular biology.

6) SYBR Green I stain may irritate skin and eyes. Please wear mask and gloves while handling.

7) This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.