

Neutral Red-Methyl Blue Stain Solution

Cat. No.: N1511064 | Pack size: 100ml | Storage: Room temperature

Product Information

Item	Description
Product name	Neutral Red-Methyl Blue Stain Solution
Catalog No.	N1511064
Pack size	100ml
Specifications & Purity	BioReagent, Biological Stain, for microscopy
Synonyms	Neutral Red-Methylene Blue Staining
Storage	Room temperature
Shipped in	Normal
Application	Cell Staining
Stability and storage	Store at room temperature long term (12 months).

Overview

The vesicles enclosed by a single membrane in animal cells belong to the vacuolar system, such as lysosomes, Golgi complexes, endoplasmic reticula, phagosomes, transport vesicles and so on. The vacuolar system is particularly well-developed in chondrocytes. A similar vacuolar system also exists in plant cells, which is generally acidic under normal conditions. Neutral Red is a weak basic dye in the form of red powder and also a pH indicator with a color change range of pH 6.4–8.0 (turning from red to yellow). In a neutral or slightly alkaline environment, living plant cells can absorb a large amount of Neutral Red and secrete it into the vacuolar system. Since the nucleic acids in the nucleus and the vacuolar system are both acidic, the Neutral Red entering them dissociates a large number of cations and exhibits a cherry red color. Thus, the nucleus and vacuolar system are stained red, while the protoplasm and cell wall are generally unstained. In dead cells, due to the denaturation and coagulation of protoplasm, the cell sap cannot be retained in the vacuolar system, so the vacuolar system will not be stained after Neutral Red treatment. On the contrary, the cations of Neutral Red bind to the protoplasm and cell nucleus with a certain negative charge, resulting in the staining of protoplasm and cell nucleus. Methylene Blue is a weak acidic dye soluble in water and alcohol, and it

is widely used in the preparation techniques of animal and plant specimens. Combined with Eosin, it can stain nerve cells, and it is also an indispensable dye in bacterial specimen preparation; its aqueous solution serves as a vital stain for protozoa. Methylene Blue is extremely susceptible to oxidation, so specimens stained with it cannot be preserved for a long time.

Neutral Red-Methyl Blue Stain Solution is a mixture of 1% Neutral Red and Methylene Blue, used to identify cell viability. This reagent stains the nucleus and vacuolar system of living cells red, the cytoplasm of dead cells blue, and the cell nucleus of dead cells dark blue, and is commonly used for the staining of plant samples.

Operating Procedures (For Reference Only):

(I) Plant Tissues

1. Take the plant root tip, place it on a glass slide, and make a longitudinal cut with a knife.
2. Add a drop of Neutral Red-Methylene Blue Staining Solution and stain for 3–8 minutes. Aspirate the staining solution and add one drop of Ringer's solution or normal saline.
3. Cover with a coverslip and press it gently with forceps (to flatten the root tip for easy observation), then observe or photograph under a light microscope.

(II) Cell Samples

1. Wash the cell samples with PBS or normal saline, centrifuge at 2000 r/min for 10 minutes, and resuspend the pellet in PBS.
2. Add an equal volume of Neutral Red-Methylene Blue Staining Solution, mix well, and stain for 2–5 minutes.
3. Aspirate the mixture, drop it onto a glass slide, cover with a coverslip, and then observe or photograph.

Staining Results:

Live cells: The nucleus and vacuolar system appear red.

Dead cells: The cytoplasm appears blue, and the nucleus appears dark blue.

Safety & Precautions

1. It is recommended to conduct a pre-experiment with 1–2 samples when using this reagent for the first time.
2. A small amount of precipitate may form in the Neutral Red-Methylene Blue Staining Solution after long-term storage, which can be filtered with a cell strainer (no impact on staining effect).

3. For the staining of cell samples, the cell pellet can be mixed with the staining solution before preparing a smear for observation.
4. The staining time can be adjusted according to the staining results and experimental requirements during sample staining.
5. The staining time of Neutral Red Staining Solution can be adjusted according to the staining results and experimental requirements.
6. For your safety and health, wear a lab coat and disposable gloves during operation.
7. For research use only. Do not use for clinical diagnosis, treatment, food, cosmetic, or household applications.
8. Read the current SDS before use and handle the product according to local laboratory safety and EHS procedures.
9. Avoid direct contact with staining solutions. Protect light-sensitive products from light as indicated on the label.

Quality Control

QC Item	Method	Acceptable Range
Appearance and color	Visual inspection	Product-consistent color with no visible microbial contamination or abnormal precipitation
Staining performance	Use on representative samples according to the procedure	Expected staining intensity and contrast are obtained
Storage condition	Review label and COA before use	Stored under recommended conditions, protected from light when indicated

Troubleshooting

Issue	Possible Causes	Corrective Action
Weak staining	• Insufficient staining time • Reagent deterioration or improper storage • Sample preparation not optimized	• Extend staining time within the recommended range • Confirm storage condition and protect from light where required • Optimize sample preparation and washing steps

Issue	Possible Causes	Corrective Action
High background or overstaining	- Excessive staining time - Inadequate washing or decolorization - Excess reagent carried over	- Shorten staining time - Increase washing/decolorization as appropriate - Use clean tools and recommended volumes
Precipitate or uneven staining	- Reagent not mixed well - Contaminated sample or container	- Mix gently before use - Use clean containers and filter only if validated for the assay

Recommended Applications

Cell Staining.

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- For Research Use Only (RUO). Not for use in human or animal diagnostics, therapeutics, or in vivo applications. Not for food, cosmetic, or household use.
- This product is not a CE-marked in vitro diagnostic device under IVDR (EU) 2017/746 and is not an FDA-cleared device under 21 CFR. Use is restricted to verified businesses, institutions, and qualified professionals for research and development purposes.

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