Sudan IV Staining Solution

Cat #: A-CSH305

Size: 3×50mL

Storage: Room temperature, avoid light (12 months)

Product Composition

Component	3×50mL	Store at
Reagent (A): Sudan staining solution	50ml	10~30°C, and were protected from light
Reagent (B): Maye Hematoxylin staining solution	50ml	10~30°C, and were protected from light
Reagent (C): Sudan differentiation solution	50ml	10~30°C

Product Description

Lipids are a collective term for neutral fats, phospholipids, and their derivatives. Their common physical characteristic is insolubility in water but solubility in organic solvents such as ethanol and ether. There are two main types of fats in the human body: 1) Storage fats, such as neutral fats, primarily found in subcutaneous tissue, kidneys, and pancreas. 2) Structural fats, such as phospholipids, glycolipids, and cholesterol, primarily found inside cells.

Neutral fat is a type of lipid composed of three molecules of fatty acids and one molecule of glycerol. It is neutral in nature. Neutral fats serve as a way to store energy and release it upon oxidation. Under normal conditions, apart from fat cells, other cells are barely visible with lipid droplets under an optical microscope. The presence of a significant amount of lipid droplets in the cytoplasm indicates fat degeneration, commonly observed in hepatocytes, cardiac muscle cells, renal tubular epithelial cells, etc.

Neutral fat staining is often performed using Sudan II, Sudan III, Sudan IV, Sudan Black B, or Oil Red O methods. The mechanism of lipid staining with Sudan dyes is believed to be purely physical, involving lipid solubilization and

adsorption. Sudan dyes have a higher solubility in lipids than in organic solvents, allowing the dye to transfer from the staining solution to the lipid being stained, resulting in the lipid acquiring the color of the staining solution.

Sudan IV fat staining solution is primarily used to demonstrate fat degeneration in tissue organs and abnormal lipid deposition, commonly occurring in the liver, kidneys, heart, etc., where numerous neutral fat droplets appear inside cells. It is also used to identify and diagnose tumors occurring in adipose tissue and determine their nature. Specimens should not be fixed with ethanol-containing fixatives (if fixation is required, 10% formalin can be used) or embedded in paraffin. Frozen sections or carbon wax sections should be used instead.

Usage

1. Fresh tissues should be sectioned at a low temperature, typically -20 to -25°C. If the sample is a lipoma, the temperature should be adjusted to -30°C.
2. Cut frozen sections of 5-10μm thickness (6-8μm is optimal) and place them on glass slides.
3. Briefly rinse the sections with 70% ethanol.
4. Immerse the sections in Sudan IV staining solution and stain for 1-2 minutes.
5. Wash off excess staining solution with 70% ethanol.
6. Rinse with distilled water for 1 minute.
7. Immerse the sections in Mayer's hematoxylin staining solution and lightly stain the cell nuclei for 2-3 minutes.
8. (Optional) If the staining appears too intense, differentiate the sections in Sudan IV differentiation solution for a few seconds.
9. Rinse with tap water for 10 minutes, followed by a brief rinse with distilled water.
10. Use filter paper to remove excess water from the sections and the surrounding area, allowing them to dry slightly.
11. Seal the sections with glycerol gelatin.

Staining Results

neutral fat	scarlet
nucleus	blue

Notes

1. Specimens should not be fixed with fixatives containing ethanol or be sectioned with paraffin. Frozen sections should be used instead.

2. During the staining process, it is important to prevent the precipitation of the dye. Therefore, when placing the sections into the staining solution, they should be sealed and protected from exposure to moving air to avoid precipitation caused by solvent evaporation.

3. Frozen sections are more prone to staining, so caution should be taken to avoid over-staining when performing Mayer's hematoxylin counterstaining.

4. Sudan dyes are prone to fading and should be stored in a tightly sealed container.

5. Samples sealed with glycerol gelatin have a limited shelf life. If long-term preservation is required, neutral gum can be applied at the edges where the cover glass meets the slide to create a seal.

6. For your safety and health, please wear a lab coat and disposable gloves while performing the procedure.

Disclaimer

The reagent is only used in the field of scientific research, not suitable for clinical diagnosis or other purposes.