Nile Blue Staining Solution (Cain Method)

Cat #: A-CSH364

Size: 3×50mL

Storage: Room temperature, avoid light (12 months)

Product Composition

Component	4×50ml	Store at
Reagent (A): Cain formaldehyde calcium fixative	250ml	10~30°C, and were protected from light
Reagent (B): Nile blue staining solution	50ml	10~30°C, and were protected from light
Reagent (C): Cain 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, which are mainly found in subcutaneous tissue, kidneys, and pancreas; 2) structural fats, such as phospholipids, glycolipids, and cholesterol, which are primarily located within cells. Neutral fat is a type of lipid composed of three fatty acid molecules and one glycerol molecule, and it is neutral in nature. Neutral fat serves as a means of energy storage and releases energy when oxidized. Common staining methods for neutral fat include Sudan II, Sudan III, Sudan IV, Sudan Black B, and Oil Red O. In certain disease processes, neutral fats within tissues can be hydrolyzed, releasing fatty acids. Detecting fatty acids within tissue sections can provide insights into certain pathological changes, and this can be observed using Sudan Black staining.

Cain staining solution (also known as Sudan Black staining solution) is used to differentiate neutral fats and acidic fats (such as fatty acids or phospholipids) within tissues. It can be used to distinguish between the two types of lipids in conditions such as atherosclerotic plaques and fat necrosis in acute hemorrhagic pancreatitis. The appearance of acidic

fats within adipose tissue indicates the breakdown of neutral fats.

Usage

1. Fix the tissue in Cain's formalin-calcium fixative and cut sections using a low-temperature constant cooling microtome or a cryostat microtome. The section thickness should be 8μm.

2. Rinse the sections with distilled water and mount them on glass slides.

3. Preheat the Nile blue staining solution to 60°C and immerse the sections in the preheated Nile blue staining solution for 10-15 minutes.

4. Prepare the Cain differentiation working solution by mixing an appropriate amount of Cain differentiation solution with distilled water in a ratio of 1:3. Differentiate the sections directly in the Page differentiation working solution until no residual color is observed.

5. Rinse slightly with distilled water.

6. Mount with glycerin gelatin.

Staining Results

neutral fat	Red or pale red
Fatty acids, and cell nuclei	blue
complex lipid	Different shades of purple
Cytoplasm and other tissue components	nattier blue

Notes

1. The Nile blue staining solution should be stored at room temperature and should not be frozen.

2. Both the staining and differentiation processes should be conducted at 60°C.

3. This Nile blue staining method has a certain degree of uncertainty and may not be able to stain all colors.

4. For your safety and health, please wear laboratory attire 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.