Nissl Staining Solution (Toluidine Blue Method)

Cat #: A-CSH398

Size: 100mL

Storage: Room temperature, avoid light (12 months)

Product Description

The neuronal cell body consists of a large nucleus with a convoluted nuclear membrane, sparse chromatin, and a prominent nucleolus. Within the cytoplasm of the cell body, there are Nissl granules, which represent rough endoplasmic reticulum and exhibit specific spot-like basophilic staining, indicating their alkaline nature, in many neurons. Nissl granules can be stained with various dyes such as neutral red, methylene blue, cresyl violet, and methylene purple. The variation in staining, pH, and differentiation time allows some stains to selectively highlight Nissl substance while also revealing the neuronal cell nucleus and neuroglia. Nissl bodies, also known as Nissl corpuscles, are triangular or elliptical small blocks of substance distributed in the cytoplasm of nerve cells, which can be stained purple-blue by basic dyes such as thionine, methylene blue, cresyl violet, and toluidine blue. Nissl bodies are present in various types of neurons, but their shape, quantity, and distribution often differ. Nissl bodies are also found in dendrites but not in axons and axon hillocks. Nissl bodies can change due to physiological conditions and are important sites for protein synthesis within neurons. When neurons are stimulated, the Nissl bodies within the cell body significantly decrease.

The Nissl staining kit (Cresyl Violet Method) is characterized by its ease of use, stable staining, short differentiation time, and wide applicability. It can be used for staining Nissl substance, neurons, and other components in paraffin-embedded tissue sections. The presence and disappearance of Nissl bodies serve as important indicators of neuronal damage. During conditions such as encephalitis, cerebral ischemia, and axonal reactions, Nissl bodies may dissolve or even disappear.

Usage

1. Fixation: Fresh tissue can be fixed using ethanol, Carnoy's fixative, or neutral formalin solution, followed by routine dehydration and embedding.

2. Tissue sectioning: Cut paraffin sections at 7-10μm or 25μm thickness (refer to Note 5).

3. Dewax the sections in a standard manner until water is reached.

4. Immerse the sections in Cresyl Violet staining solution at 37℃ for 10-30 minutes.

5. Rinse with distilled water.

6. Differentiate the sections in differentiation solution for 10-30 seconds (observe under a microscope until the background becomes nearly colorless).

7. Dehydrate rapidly in absolute ethanol. Clear with xylene and mount with neutral mounting medium.

Notes

1. Nissl bodies are prone to dissolution after being detached from the tissue, so immediate fixation of the tissue upon removal is necessary; otherwise, staining becomes difficult.

2. Tissue fixation plays a crucial role, and fixation can be achieved using ethanol, Carnoy's fixative, or neutral formalin solution.

3. This staining solution provides good Nissl staining results for paraffin-embedded tissue sections.

4. If it is necessary to confirm the presence of Nissl substance, differentiation with a differentiation solution must be performed after staining.

5. Cut paraffin sections at a thickness of 7-10μm or 25μm (a thickness of 25μm is required for evaluating the density of cortical neurons).

6. After staining, it is important to store the specimens protected from light to prevent fading.

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

Disclaimer

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