Nissl Staining Solution (Methylene Blue Method)

Cat #: A-CSH347

Size: 3×50mL

Storage: Room temperature, avoid light (6 months)

Product Composition

Component	3×50mL	Store at
Reagent (A): methylene blue staining solution	50ml	10~30°C, and were protected from light
Reagent (B): Acid differentiation solution	50ml	10~30°C, and were protected from light
Reagent (C): aqueous ammonium molybdate solution	50ml	10~30°C, and were protected from light

Product Description

Neuronal cell bodies consist of a large nucleus with a wrinkled nuclear membrane, sparse chromatin, and a prominent nucleolus. Within the cytoplasm of the cell body, there are Nissl bodies, which represent the rough endoplasmic reticulum and exhibit distinctive basophilic granules in many neurons. Nissl bodies can be demonstrated using various stains such as neutral red, methylene blue, cresyl violet, and methyl violet. Variations in staining, pH, and differentiation time can highlight Nissl substance alone or reveal both the neuronal cell nucleus and neuroglia.

Nissl bodies, also known as Nissl granules or Nissl substance, are triangular or elliptical blocks of material distributed within the cytoplasm of nerve cells. They 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 nerve cells, although their shape, quantity, and distribution may vary. Nissl bodies are also found in dendrites but not in axons or axon hillocks. The presence of Nissl bodies can change due to physiological conditions, and they play an important role in protein synthesis within neurons. When neurons are stimulated, the Nissl bodies within the cell bodies noticeably decrease. Nissl staining (methylene blue method) has the advantages of being easy to perform, providing stable staining, and having a wide

range of applications. It can be used to stain Nissl substance and neurons in paraffin-embedded tissue sections. The presence or disappearance of Nissl bodies is an important indicator of neuronal damage. In conditions such as encephalitis, cerebral ischemia, and axonal reactions, Nissl bodies may dissolve or disappear.

Usage

1. Fresh tissue is fixed in 10% formalin and routinely dehydrated and embedded.
2. Sections are routinely dewaxed to water.
3. Stain with methylene blue staining solution for 10 minutes.
4. Differentiate in acidic differentiation solution for 1-3 minutes (specific differentiation time depends on the situation) until Nissl bodies are clearly visible under a microscope.
5. Treat the sections with ammonium molybdate solution for 3-5 minutes.
6. Rinse quickly with distilled water to prevent decolorization.
7. Dehydrate with absolute ethanol, clear with xylene, and mount with neutral mounting medium.

Staining Results

Nickel and nucleolus	blue

Notes

1. Nissl bodies are prone to dissolution once they are detached, so immediate fixation of the tissue after removal is necessary; otherwise, staining becomes difficult.
2. Tissue fixation plays a crucial role and can be achieved using ethanol, Carnoy's fixative, or neutral formalin solution.
3. This staining kit provides good Nissl staining results for paraffin-embedded tissue sections.
4. The thickness of paraffin sections should be 7-10 μm or 25 μm (a thickness of 25 μm is required for assessing cortical neuronal density).
5. After staining, it is essential to store the specimens protected from light to prevent fading.
6. For your safety and well-being, 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.