Calcium Salt Staining Solution (Von Kossa Silver Method)

Cat #: A-CSH334

Size: 3×50mL, 3×500mL

Storage: 2~8°C, avoid light (6 months)

Product Composition

Component	3×50mL	3×500mL	Store at
Reagent (A): Von Kossa silver solution	50ml	500ml	2~8°C, and were protected from light
Reagent (B): Seawave solution	50ml	500ml	10~30°C
Reagent (C): Nuclear solid staining solution	50ml	500ml	10~30°C, and were protected from light

Product Description

Calcium exists in large quantities in the human body and forms the skeletal structure that supports the body. It also plays a crucial role in secretion, transport, muscle contraction, and nerve conduction. Calcium exists in two forms in the body: ionized calcium, which circulates in the blood and is known as blood calcium, and bound calcium, which combines with proteins, carbonates, or phosphates and deposits in tissues. In addition to bones and teeth, calcium permeates all tissues and cells in normal conditions and generally does not appear in a solid state within tissues. However, in certain situations, calcium can precipitate and deposit as solid in tissues, which is known as pathological calcium salt deposition. The main calcium salt deposited is calcium phosphate, followed by calcium carbonate. Calcium salts are usually uniaxial, but calcium oxalate is birefringent. When using HE staining, calcium generally appears as purple-blue. Many dyes can form chelates with calcium, including Alizarin Red S, Ponceau S, and Nuclear Fast Red. Alizarin Red S is a derivative of anthraquinone and is the sodium salt of alizarin sulfonic acid. It can chelate with calcium salts, such as calcium carbonate or calcium phosphate, forming an orange-red complex.

Common methods for calcium salt staining include the silver nitrate method and the Alizarin Red S method. The calcium

salt staining solution uses Von Kossa's silver method, which works on tissue sections containing insoluble calcium salts. In this method, calcium is replaced by silver, and the silver salt is reduced to black metallic silver under the action of light. This staining method is suitable for calcium salt tissue staining of a large number of samples.

Usage

1. Fix the tissue in 10% neutral formalin and perform routine dehydration and embedding.
2. Cut the sections to a thickness of 5μm and perform routine dewaxing until water.
3. Rinse the sections with distilled water for 1 minute.
4. Place the sections in Von Kossa's silver solution and expose them to bright light for 15-60 minutes.
5. Rinse the sections with distilled water for 1 minute.
6. Treat the sections with ammonium hydroxide solution for 2 minutes.
7. Stain the cell nuclei with Nuclear Fast Red staining solution for 5 minutes.
8. Perform routine dehydration, clearing, and seal with neutral mounting medium.

Staining Results

calcium salt	Brown-black to dark black
nucleus	red
cytoplasm	rose hermosa

Notes

1. It is preferable to fix calcium salt tissues with neutral formalin and avoid using acidic fixatives such as Bouin's solution and formaldehyde calcium fixative. If using conventional 10% formalin fixation, dehydration and embedding can be performed after 4-6 hours of fixation to prevent acidification of the fixative, which can lead to calcium salt dissolution.
2. The duration of exposure depends on the intensity and duration of sunlight. Exposing the sections to strong light for 15 minutes is usually sufficient. If exposed to ultraviolet light, 10 minutes is adequate. If exposed to normal light, it is advisable to extend the exposure time appropriately.
3. This staining method can differentiate between urate salts and calcium salts. The principle is that calcium salts are

insoluble in lithium carbonate solution, while urate salts are easily soluble in lithium carbonate solution. After treating the sections with lithium carbonate, they are placed in Von Kossa's silver solution and exposed to bright light. Urate salts will show a negative reaction.

4. 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.