

## **J-615 SILVER METHOD FOR MERCURY**

**Fixation:** 10% Buffered Neutral Formalin

**Sections:** Paraffin sections cut at 7 µm.

**PROCEDURE:** Use control slide.

1. Deparaffinize and hydrate to distilled water.
2. Place in **Ammonia Alcohol Solution** (J-615-1) to remove formalin pigment, for 10 minutes.
3. Wash well in running water.
4. Rinse in three changes of distilled water.
5. Place in freshly prepared **Silver Nitrate Gelatin Hydroquinone Solution** in a plastic Coplin jar and place in a 37°C oven for 18 minutes.

\*\* To prepare Silver Nitrate-Gelatin-Hydroquinone Solution:  
Prepare immediately before use.

**Silver Nitrate, 2%** (J-615-2) 10 ml

**Gelatin, 4%** (J-615-3) 25 ml

**Hydroquinone, 0.02%** (J-615-4) 10 ml

Heat Gelatin solution to 60°C on a hot plate. Remove from heat add Silver Nitrate, mix add **Hydroquinone, 0.02%** mix.

6. Wash well in hot running water.
7. Rinse in two changes of distilled water.
8. Place in **Sodium Thiosulfate, 2%** (J-615-5) for 1 minute.
9. Rinse in four changes of distilled water.
10. Counterstain with **Nuclear Fast Red** (J-615-6) for 3 minutes.
11. Rinse in two changes of distilled water.
12. Dehydrate in graded alcohols.
13. Clear in three or four changes of Xylene.
14. Mount with synthetic resin.

**Stain Results:**

Mercury	Black
Calcium	Black
Copper	Black
Lipofuscin	Black
Neuromelanin	Black
Nuclei	Red

**References:**

Danscher, G. and Moller-Madsen, B.: Silver amplification of mercury sulfide and selenide: a histochemical method for light and electron microscopic localization of mercury in tissue. J. Histochem. 33219-228, 1985.

Moller-Madsen, B. and Danscher, G.: Localization of mercury in DNS of rat. Environmental research 41:29-43, 1986.

**COMMENTS:**

This new method for demonstrating mercury as a modification of the Warthin-Starry technique for spirochetes and bacteria. It differs from the original Warthin-Starry procedure in that the tissue sections are not pre-treated with silver nitrate prior to placing them in a dark 37°C oven instead of a water bath or microwave oven. It is important that the silver reaction take place in the dark in order to minimize non-specific staining.

Like most silver methods, this technique is not specific for its desired purpose. Other metals that stain black, besides mercury, are calcium and copper, but not ferric iron. Also, melanin neuromelanin and lipofuscin stain black.