
MUCICARMINE STAIN - SOUTHGATE'S - MUCIN

PURPOSE: To stain mucin which is a secretion produced by a variety of epithelial cells and connective tissue cells. Excess mucin is secreted by epithelial cells in certain inflammations and in certain intestinal carcinomas. The mucicarmine technique is also useful in determining the site of a primary tumor in that finding mucin positive tumor cells in an area that does not contain mucin producing cells would indicate the tumor did not arise from that area. It is also useful in staining encapsulated fungi; cryptococcus.

PRINCIPLE: aluminum is believed to form a chelation complex with the carmine, changing the molecule to a positive charge allowing it to bind with the acid substrates of low density such as mucins.

CONTROL: Small intestine

FIXATIVE: 10% buffered formalin.

TECHNIQUE: Cut paraffin sections 4-5 m.

EQUIPMENT: Rinse glassware in DI water. Stirring hot plate, magnetic stir bars, 500 ml beaker, coplin jars, microwave oven.

REAGENTS:

**Southgate's
Solution:**

Carmine, alum lake	1.0 gm
Aluminum hydroxide	1.0 gm
50% alcohol	100.0 ml

Mix well, add:

Aluminum chloride, anhydrous	0.5 gm
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Boil gently for 2¹/₂ minutes. Cool, filter, refrigerate. Good for 6 months.

CAUTION: FLAMMABLE, avoid contact and inhalation.

Mayer's Hematoxylin:
See Congo Red Procedure

Metanil Yellow Solution:

Metanil yellow	0.25 gm
Distilled water	100.0 ml
Glacial acetic acid	0.25 ml

Mix well, label and date, good for 1 year.

Caution: avoid contact and inhalation.

CARBOHYDRATES

MUCICARMINE

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SAFETY: Use the hood when preparing stains and microwaving solutions. Wear gloves and lab coat.

Add aluminum chloride slowly, it is water reactive. Avoid breathing dust.

Metanil Yellow; target organ effects on reproductive system after chronic feeding studies in male rats. Avoid contact and inhalation of dyes.

PROCEDURE:

1. Deparaffinize and hydrate to distilled water.
2. Mayer's hematoxylin for 10 minutes.
3. Wash in running tap water, 5 minutes.
4. *Mucicarmine solution, microwave HI power, 45 seconds.
5. Rinse quickly in distilled water.
6. Metanil yellow, 30 seconds to 1 minute.
7. Dehydrate quickly in three changes of absolute alcohol, clear and coverslip in Permount.

*Conventional Method: Mucicarmine solution at room temperature for 1 hour.

RESULTS:

Mucin	deep rose
Nuclei	black
Other tissue elements	yellow

REFERENCES:

- Bancroft J, Stevens A, Theory and Practice of Histological Techniques, 2nd Ed, 1982, pp201-202, Churchill-Livingstone, NY
- Carson F, Histotechnology A Self-Instructional Text, 1990, 1st Ed, pp124-125, ASCP, III
- Crookham,J, Dapson,R, Hazardous Chemic Is in the Histopathology Laboratory, 2nd ED, 1991, Anatech

Prepared: _____ By: _____

Approved: _____ By: _____

PROCEDURE CARD

MUCIN - SOUTHGATE'S MUCICARMINE STAIN

CONTROL: Small intestine

PROCEDURE:

1. Deparaffinize and hydrate to distilled water.
2. Mayer's hematoxylin for 10 minutes.
3. Wash in running tap water, 5 minutes.
4. *Mucicarmine solution, microwave HI power, 45 seconds.
5. Rinse quickly in distilled water.
6. Metanil yellow, 30 seconds to 1 minute.
7. Dehydrate quickly in three changes of absolute alcohol, clear and coverslip in Premount.
*Conventional Method: Mucicarmine solution at room temperature for 1 hour.

RESULTS:

Mucin	deep rose
Nuclei	black
Other tissue elements	yellow

SAFETY/PPE: Use the hood when preparing mucicarmine stain and microwaving solutions. Wear gloves and lab coat. All aluminum chloride slowly; water reactive.

Southgate's Mucicarmine Solution:

Carmine, alum lake	1.0 gm
Aluminum hydroxide	1.0 gm
50% alcohol	100.0 ml

Mix well, add:

Aluminum chloride, anhydrous	0.5 gm
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Boil gently for 21/2 minutes. Cool, filter and store in the refrigerator. Label with date and initials, good for 6 months.

Metanil Yellow Solution:

Metanil yellow	0.25 gm
Distilled water	100.0 ml
Glacial acetic acid	0.25 ml

Mix well, label and date, good for 6 months.

Mayer's Hematoxylin:

See Congo Red

CAUTION: Flammable, corrosive.

SOUTHGATE'S MUCICARMINE:

Carmine, alum lake 1.0 gm
Aluminum hydroxide 1.0 gm
50% alcohol 100.0 ml

Mix well, add:

Aluminum chloride, anhydrous 0.5 gm

Boil gently for 2 1/2 minutes.
Cool, filter and store in the refrigerator. Label with date and initials, good for 6 months.

CAUTION: Flammable, corrosive.
Aluminum chloride is water reactive.

SAFETY/PPE: Wear gloves, goggles and lab coat. Work under hood. Add aluminum chloride slowly.

DATE: _____

TECH: _____

EXPIRATION: _____

MUCICARMINE STAIN

DATE: _____

TECH: _____

METANIL YELLOW SOLUTION:

Metanil yellow 0.25 gm
Distilled water 100.0 ml
Glacial acetic acid 0.25 ml

Mix well, label and date, good for 6 months.

Caution: avoid contact and inhalation.

DATE: _____

TECH: _____

EXPIRATION: _____

METANIL YELLOW

DATE: _____

TECH: _____

Mayer's Hematoxylin:

Hematoxylin	1.0 gm
Distilled water	1000.0 ml
Sodium iodate	0.2 gm
Ammonium or Potassium aluminum sulfate	50.0 gm
Citric acid	1.0 gm
Chloral hydrate	50.0 gm

Dissolve the hematoxylin in water, heat to boiling, boil for 5 minutes. Remove from heat, add sodium iodate, wait 10 minutes to ripen. Add the remainder of the chemicals in the order given, dissolving each one before adding the next. Label, initial, stable for 1 year.

SAFETY/PPE: Wear gloves, goggles and lab coat. Work in well ventilated area or under hood.

DATE: _____

TECH:

MAYER'S HEMATOXYLIN

DATE: _____

TECH: _____