

## INTENDED USE

Sigma-Aldrich Mucicarmine Staining reagents are intended for staining tissue mucins of epithelial origin. Mucicarmine staining reagents are for "In Vitro Diagnostic Use".

Tissue acid-mucopolysaccharides may be demonstrated by a variety of techniques. Mayer's mucicarmine procedure, as modified by Southgate,<sup>1</sup> achieves excellent contrast between red staining mucin and other cellular components. Aluminum, contained in the formulation, is believed to form a chelate complex with mucin, to which carmine attaches by dye-lake formation.<sup>2</sup> The stain displays a specificity towards mucins of epithelial origin, whereas mucins of fibroblastic origin stain poorly.<sup>3</sup> Its major use may be in identification of primary tumor sites and distinguishing mucin-negative undifferentiated squamous cell lesions from mucin-positive adenocarcinomas.<sup>2</sup> The procedure described by Sigma-Aldrich is similar to that of Southgate. A stable solution of tartrazine has been substituted for metanil yellow. Included is a mucicarmine stain technique for rapid staining in microwave oven.<sup>4,6</sup>

## REAGENTS

**MUCICARMINE STOCK SOLUTION**, Catalog Nos. HT3018-250 ml or HT30116-500 ml Carmine, certified, 10 g/l, aluminum hydroxide, 10 g/l, and aluminum chloride, 5 g/l, in ethanol, 50% v/v.

### STORAGE AND STABILITY

Store Mucicarmine Stock Solution in refrigerator (2–8°C). Reagent is stable until expiration date shown on label.

Working Mucicarmine Solution is stable for 2–3 days when stored in refrigerator (2–8°C).

### PREPARATION:

Working Mucicarmine Solution is prepared by diluting Mucicarmine Stock Solution 1:4 with tap water (e.g., 10 ml Mucicarmine Stock Solution plus 30 ml tap water).

Tartrazine solution and Gill's No. 3 hematoxylin are ready to use. Solutions are stable until the stated expiration date.

Scott's Tap Water Substitute is prepared by mixing 1 part of Scott's Tap Water Substitute Concentrate with 9 parts deionized water. Solution is stable until the stated expiration date.

### PRECAUTIONS:

Normal precautions exercised in handling laboratory reagents should be followed. Dispose of waste observing all local, state, provincial or national regulations. Refer to Material Safety Data Sheet and product labeling for any updated risk, hazard or safety information.

Mucicarmine TISSUE-TROL™ control slides are paraffin embedded human tissue containing collagen and muscle tissue and should be considered potentially infectious.

## PROCEDURE

### SPECIMEN COLLECTION:

It is recommended that specimen collection be carried out in accordance with CLSI document M29-A3. No known test method can offer complete assurance that blood samples or tissue will not transmit infection. Therefore, all blood derivatives or tissue specimens should be considered potentially infectious.

Any well-fixed paraffin sections cut at 5–6 microns may be used. Incorporate appropriate control slides.

### SPECIAL MATERIALS REQUIRED, BUT NOT PROVIDED:

Positive control slides, such as Mucin TISSUE-TROL™, Catalog No. TTR008, should be included in each run

Tartrazine Solution, Catalog Nos. HT3024-120 ml or HT3028-250 ml

Reagent Alcohol

Xylene or xylene substitute

### STANDARD PROCEDURE ONLY:

Weigert's Iron Hematoxylin Set, Catalog No. HT1079-1 set

Staining Jars, Catalog No. S5641

### MICROWAVE PROCEDURE ONLY:

Hematoxylin Solution, Gill No. 3, Catalog No. GHS316/ GHS332/ GHS380/ GHS3128

Scott's Tap Water Substitute Concentrate, Catalog No. S5134

Coplin Jar with vented lids

Microwave Oven

### NOTES:

Do not substitute deionized or distilled water for tap water when preparing the mucicarmine working solution.

Masking of mucin may occur if the nuclear stain or counterstains are too intense.

The data obtained from this procedure serves only as an aid to diagnosis and should be reviewed in conjunction with other clinical diagnostic tests or information.

### PROCEDURE:

#### STANDARD PROCEDURE:

1. Prepare Working Weigert's Iron Hematoxylin Solution.
2. Deparaffinize slides to deionized water.
3. Stain in Working Weigert's Iron Hematoxylin Solution for **5 minutes**.
4. Wash in running tap water for **5 minutes**.
5. Stain in Working Mucicarmine Solution for **30 minutes** or longer at **room temperature**. Check control slide under microscope.  
NOTE: The time may be decreased if staining is performed at 37°C or 56°C.
6. Rinse in deionized water.
7. Stain in Tartrazine Solution for **1–5 seconds**.
8. Rinse slides, dehydrate through alcohol, clear in xylene and mount.

#### MICROWAVE PROCEDURE:

1. Deparaffinize slides and hydrate to deionized water.
2. Place slides in **40 ml** of Hematoxylin Solution, Gill No. 3, contained in a plastic Coplin jar. Loosely cover with lid before placing in oven, or use Coplin jar lids with holes drilled into them.
3. Microwave on **800 WATTS** for **10 seconds**.
4. Rinse in running tap water for **1–2 minutes**.
5. Blue in Scott's Tap Water substitute.
6. Place slides in **40 ml** of Mucicarmine Working Solution.
7. Microwave on **800 WATTS** for **20 seconds**. Mix gently with beral pipet or applicator stick. Let incubate for **5 minutes**.
8. Rinse well in deionized water.
9. Counterstain in Tartrazine Solution for **30 seconds** at **room temperature**.
10. Rinse quickly in deionized water.
11. Dehydrate quickly through alcohols and clear in xylene. Mount slides.

## PERFORMANCE CHARACTERISTICS

Nuclei	— Blue
Mucin	— Deep Rose to Red
Capsule of Cryptococci	— Deep Rose to Red
Other Tissue Elements	— Yellow

If observed results vary from expected results, please contact Sigma-Aldrich Technical Service for assistance.

## REFERENCES

1. Handbook of Histopathological Techniques, 2nd ed., CFA Culling, Editor, Butterworth Inc., London, 1963
2. Theory and Practice of Histotechnology, 2nd ed. DC Sheehan, BB Hrapchak, Editors, Mosby, St. Louis, MO, 1980
3. Selected Histochemical and Histopathologic Methods, SW Thompson, RD Hunt, Editors, CC Thomas, Springfield, IL, 1966, p 453
4. Leong AS-Y, Milios J: Rapid immunoperoxidase staining of lymphocyte antigens using microwave irradiation. J Pathol 148:183, 1986
5. Brinn NT: Rapid metallic histologic staining using the microwave oven. J Histotechnol 6:125, 1983
6. Valle S: Special stains in the microwave oven. J Histotechnol 9:237, 1986

TISSUE-TROL is a trademark of Sigma-Aldrich Co. LLC

2014 Sigma-Aldrich Co. LLC. All rights reserved. SIGMA-ALDRICH is a trademark of Sigma-Aldrich Co. LLC, registered in the US and other countries. Sigma brand products are sold through Sigma-Aldrich, Inc. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see product information on the Sigma-Aldrich website at [www.sigmaaldrich.com](http://www.sigmaaldrich.com) and/or on the reverse side of the invoice or packing slip.

Procedure No. HT30  
Previous Revision: 2014-09  
Revised: 2016-11

SYMBOLS BS EN 9610:2008	REF	LOT	IVD	Temperature Range	Use By	Consult Instructions for Use	Manufacturer	Authorized Rep in the EU
	Catalog No.	Batch No.	In Vitro Diagnostic Use					



MDSS GmbH  
Schiffgraben 41  
30175 Hannover, Germany



**SIGMA-ALDRICH, INC.**  
3050 Spruce Street, St. Louis, MO 63103 USA  
314-771-5765  
Technical Service: 800-325-0250  
or e-mail at [clintech@sial.com](mailto:clintech@sial.com)  
To Order: 800-325-3010  
[www.sigma-aldrich.com](http://www.sigma-aldrich.com)