IVD In Vitro Diagnostic Medical Device
For professional use only

May-Grünwald's stain for microscopy

35135 May-Grunwald's stain
35206 May-Grunwald's eosin methylene blue solution
35262 May Grunwald's eosin methylene blue solution modified for microscopy

Cat. No	Pack Type	Pack Size
351355C	Glass Bottle	1 l
352065W	Glass Bottle	1 l
352625P	Glass Bottle	500 ml
352622M	Glass Bottle	1 l

Composition

35206	C.I. No. 52015 0.8 g/l C.I. No. 45380 0.7 g/l contains CH_3OH
35262	C.I. No. 52015 0.8 g/l C.I. No. 45380 0.7 g/l contains CH_3OH
35135	C.I. No. 52015 0.8 g/l C.I. No. 45380 0.7 g/l contains CH_3OH

Intended Use(s)

May-Grünwald´s staining solution for microscopy is a standard method for differential staining of blood and bone marrow smears.
It is used for the initial evaluation to differentiate nuclear and/or cytoplasmic morphology of platelets, RBCs, WBCs for diagnosis, (size,form and content) and examined under microscope .
Evaluate the result by comparing it to what would be the age related normal values
Review of the smears helps in determining the need for ancillary studies, such as cytochemistry, immunophenotyping, cytogenetic analysis, and molecular genetic study.
An initial review of the patient's clinical background is necessary to use in conjuntion with the result of the staining
Samples derived from the human body

References:
Luna LG. Manual of Histologic Staining Methods of the AFIP, 3rd edition, McGraw-Hill Book Company, New York, New York, 1968
Clark, G., (ed.). Staining Procedures, 3rd ed., Williams & Wilkins, Baltimore, pp. 131-132, c. 1973.

Characteristics and performances

The typical colour of cell nuclei, namely purple, is due to molecular interaction between eosin Y and an azure B-DNA complex.
Both dyes build up the complex later. The intensity of the staining depends on the azure B content and on the ratio azure B/eosin Y. The staining result can be influenced by several factors such as the pH of the solutions and buffer solution, buffer substances, fixation, staining time. To ensure a reproducible colour picture it is essential therefore to work in a buffered environment. Of the two more common pH's chosen 6.8 will favour a bluer picture whereas 7.2 produces a stronger reddish colouring.

Reagent

Cat. No	Description	Pack Size
35206	May-Grünwald's eosin methylene blue soln.	1 l
35262	May-Grünwald's stain solution 500ml,	500 ml, 1 l
35135	May-Grunwald's Stain (RA Lamb)	1 l
35260	Giemsa stainins solution	500ml
20847	Methanol Analar Normapur Reagent Ph. Eur.	1 l, 2,5 l, 5 , 25 l
363110	Buffer tablets acc. to Weise pH 6,8	
1.09468	Buffer tablets acc. to Weise pH 7,2	

Preparation

1. Buffer solution
Dissolve 1 buffer tablet in 1 l distilled water.
The choise of buffer depends on the users experience and preference on the required reaction colour
2. Dilute May-Grünwald's solution for manual staining
Dilute 30 ml May-Grünwald's solution with 150 ml distilled water and add 20 ml buffer solution.
3. Dilute May-Grünwald's solution for staining with MIRASTAINER[] (automated instrument)
Slowly add 30 ml buffer solution and 220 ml distilled water to 50 ml May-Grünwald's solution, mix and leave to stand for 10 min.
4. May-Grünwald's eosin methylene blue solution
Dissolve 0.25 g May-Grünwald's stain in 100 ml methanol while warming gently on a water bath at 60°C, stir for 1 h, leave to stand for 24 h and filter.

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Instructions for use

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Air-dried blood and bone marrow smears

Films are made by placing a drop of the samples on one end of a slide, and using a *spreader slide* to disperse the sample over the slide's length. The aim is to get a region where the cells are spaced far enough apart to be counted and differentiated.The slide is left to air dry

In order to avoid errors, the staining process must be carried out by qualified personnel. National guidelines for work safety and quality assurance must be followed. Microscopes equipped according to the standard must be used.

All samples must be clearly labelled.

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Procedure

Air-dried smears

Staining rack

May-Grünwald's solution	3 min
Buffer solution (1 ml) add, mix, stain	6 min
Rinse with buffer solution	
Dry	

Staining cuvette

May-Grünwald's solution	3 min
Dilute May-Grünwald's solution	6 min
Rinse with buffer solution	2 x 1 min
Dry	

Staining with MIRASTAINER® (automated instrument)

	Time	Station	DIP
May-Grünwald's solution	3 min	2	On
Dilute May-Grünwald's solution	6 min	3	On
Buffer solution	1 min	4	On
Running water (rinse)	2 min	5	On
Dry	3 min	6	-

Pappenheim's staining

Staining with May-Grünwald's solution and Giemsa's solution

Cover the smear with 1 ml May-Grünwald's solution	3 min
Add 1 ml buffer solution, mix and stain	3-5 min
Cover with diluted Giemsa's solution, stain	15-20 min
Rinse with buffer solution	
Dry	

Result

The microscope used should meet the requirements of a medical deagnostic laboratory

Cell type	May-Grünwald's staining	Pappenheim's staining
Nuclei	red to violet	purple to violet
Lymphocytes	plasma blue	plasma blue
Monocytes	plasma dove-blue	plasma dove-blue
Neutrophilic granulocytes	granules light violet	granules light violet
Eosinophilic granulocytes	granules brick-red to red-brown	granules brick-red to dark violet
Basophilic granulocytes	granules dark violet to black	granules dark violet to black
Thrombocytes	violet	violet
Erythrocytes	reddish	reddish

Evaluate the result by comparing it to what would be the age related normal values

Review of the smears helps in determining the need for ancillary studies, such as cytochemistry, immunophenotyping, cytogenetic analysis, and molecular genetic study.

An initial review of the patient's clinical background is necessary to use in conjuntion with the result of the staining

Samples derived from the human body

References:

Luna LG. Manual of Histologic Staining Methods of the AFIP, 3rd edition, McGraw-Hill Book Company, New York, New York, 1968

Clark, G., (ed.). Staining Procedures, 3rd ed., Williams & Wilkins, Baltimore, pp. 131-132, c. 1973.

Sample preparation

Prepare air-dried films by placing a drop of the samples on one end of a slide, and using a *spreader slide* to disperse the sample over the slide's length. The aim is to get a region where the cells are spaced far enough apart to be counted and differentiated.The slide is left to air dry

All samples must be treated using state-of-the-art technology.

All samples must be clearly labelled.

Suitable instruments must be used for taking samples and for their preparation. Follow the manufacturer's instructions for application/use.

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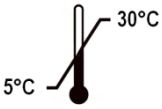
Diagnostics
Diagnoses are only to be made by authorised and trained persons. Valid nomenclatures must be used.
Further tests must be selected and implemented according to recognised methods.

Storage


Store the staining solution at +15°C to +25°C



and the dye at +5°C to +30°C.
The solution and the dye must be used by the expiry date stated.

Shelf life

After first opening the bottle, the contents can be used up to the expiry date when stored at +15°C to +25°C (solution) or +5°C to +30°C (dye). The bottles must be kept tightly closed at all times.

Auxiliary reagents

Cat. No	Description	Pack Size
36126	Microil Immersion Oil tropical grade	100 ml
36104	Microil Immersion Oil	100 ml, 500 ml
36102	Lenzol Immersion Oil Gurr	100 ml

Precautioniary measures on health hazards
Effective measures must be taken to protect against infection in line with laboratory guidelines.

Physical Hazard classification
Please observe the hazard classification on the label and the information given in the safety data sheet.
The VWR safety data sheet is available on the Internet.

Instructions for environmental disposal
Used solutions and solutions that are past their shelf-life must be disposed of as special waste according to local disposal guidelines.VWR International can provide technical support for local disposal solutions.

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