May Grunwald-Giemsa (MGG) Stain

Intended Use
Ready to use combi kit each of May Grunwald Stain and Giemsa Stain is used for staining of blood, bone marrow smears and clinical cytological specimens.

Principle
In hematology polychromatic Romanowsky dyes are standard for blood smears and bone marrow staining. Various sorts of Romanowsky dyes (Giemsa, May-Grunwald, Leishman, Wright, Jenner) contain different ratios of methylene bluing reagent used as the cation component (and the reagent-related thiazine dyes, such as azure B) and eosin Y as the anion component. Cation and anion components interaction creates a well-known Romanowsky effect that cannot be achieved if each component is being used individually. Purple color indicates the effect's presence. Staining intensity depends on the azure B content, as well as azure B to eosin Y ratio, while a few other factors affect the result of staining: working solution pH value and buffer solution, fixation method and dye exposure time. May-Grunwald solution is used for staining bone marrow and peripheral blood smear; for staining lymphocytes, monocytes, granulocytes (neutrophils, eosinophils and basophils), thrombocytes and erythrocytes. The May-Gruenwald solution is used in cytology to stain cyto-diagnostic puncture aspirates, cells from diarrhea and secretion. One of the well-known methods that use the May-Grunwald solution is in combination with the Giemsa solution in the May-Grunwald Giemsa, or Pappenheim method. Giemsa staining makes the effect of azure more prominent for staining all cellular components. The basic dyes carry net positive charges; consequently, they stain nuclei (because of the negative charges of phosphate groups of DNA and RNA molecules), granules of basophil granulocytes and RNA molecules of the cytoplasm of white blood cells. The eosin carries net negative charge and stains red blood cells and granules of eosinophil granulocytes.

Reagents / Contents
May Grunwald

Eosin Y	1.0 g
Methylene blue	1.0 g
Methanol	100 mL

Giemsa Stain

Azur II eosin	3.0 g
Azur II	0.8 g
Glycerine	125 mL
Methyl alcohol, absolute	375 mL

**Formula adjusted, standardized to suit performance parameters

Appearance:
May Grunwald: Dark blue colour solution.
Giemsa Stain: Dark blue colour solution.

Storage and Stability
Store at 15°C - 30°C away from bright light. Use before expiry date on label.

Type of Specimen
Clinical specimen: Blood, bone marrow smears and clinical cytological specimens.

Materials required but not provided
Clean grease-free glass slide, staining rack, blotting paper, immersion oil (Cat. No.207090110025) and microscope.

Procedure
1. Prepare thin smear of blood sample and air dry.
2. Fix smears for 3 minutes with methanol or with Heme Fixative.
3. Stain the smear in May Grunwald stain diluted with an equal volume of distilled water for 5 minutes.
3. Put the smears without washing in 1:3 solution of Giemsa stain diluted with distilled water for 8-10 minutes.

4. Wash the smears in distilled water and let them dry.
5. Observe under microscope, 40X and 100X under oil immersion lens.

Interpretation of Results

Erythrocytes:	Pink
Lymphocytes:	Blue cytoplasm with blue violet nucleus
Eosinophil:	Blue violet
Eosinophilic Granules:	Deep red
Neutrophil:	Deep blue to blue violet
Neutrophil granules:	Red
Basophil:	Blue violet nucleus

Warranty

This product is designed to perform as described on the label and pack insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product	Pack Size
207131700125	May Grunwald-Giemsa (MGG) Stain Kit	2 x 125 mL
207131700250		2 x 250 mL
207131020250	May Grunwald	250 mL
207131020500		500 mL
207070210100	Giemsa Stain	100 mL
207070210250		250 mL
207070210500		500 mL
207070211000		1000 mL