

# WRIGHT'S SOLUTION

CE IVD *In vitro* diagnostic medical device

Classified acc. to Regulation (EU) 2017/746 - Class A device

## Polychromatic solution of eosin Y, methylene blue and azure dyes

### For staining in hematology, cytology and cytogenetics

#### UPUTA ZA RUKOVANJE

<b>BASIC UDI number</b>	385889212HPC3010302HMCA		
<b>EMDN kód</b>	W0103010302		
<b>REF</b>	<b>Catalog number</b>	<b>Volume</b>	<b>UDI-DI number</b>
WR-OT-100		100 mL	03858888822422
WR-OT-500		500 mL	03858888822439
WR-OT-1L		1000 mL	03858888822446



#### Intended use and test principle

In hematology polychromatic Romanowsky dyes are a standard for blood smears and bone marrow staining. Various sorts of Romanowsky dyes (Giemsa, May-Gruenwald, 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. BioGnost's Wright's solution is used for differentiating nuclear and/or cytoplasmic morphology of thrombocytes, erythrocytes, and lymphocytes in blood smear or bone marrow aspirates. Besides in hematology, it is also used for staining chromosomes in cytogenetics for detecting chromosomal aberrations and diagnosing genetic syndromes.

#### Product description

- **WRIGHT'S SOLUTION** - Solution of eosin, Methylene Blue and azure dyes in methanol with added stabilizer.

#### Additional reagents and materials that can be used in this method

- VitroGnost slides and coverslips for use in histopathology and cytology
- BioGnost's immersion oils, such as Immersion oil, Cedarwood oil, Immersion oils types A and C, FF, 37 or Tropical Grade
- BioGnost's Buffer tablets pH 6,8 or 7,2

#### Preparation of solutions

- Dissolve 1 buffer tablet in 1 liter of distilled/ demineralized water while stirring. Filter after dissolving.

During the staining process it is possible to use pH 6.8 or pH 7.2 buffer solution or a combination of pH 6.8 and 7.2 buffer solutions. The process's results can differentiate in shift toward red or blue on the color spectrum.

#### Wright's working solution for vertical staining

- Combine 30 mL of Wright's solution with 150 ml of distilled/demineralized water and with 20 ml of pH 6.8 or pH 7.2 buffer solution. Let it set for 10 min. Filter before use

#### Wrights working solution for staining in automatic stainer

- Combine 50 mL of Wright's solution with 220 ml of distilled/demineralized water and with 30 ml of pH 6.8 or pH 7.2 buffer solution. Let it set for 10 min. Filter before use

#### NOTE

Make sure that the part of the slide with the sample is fully immersed into each corresponding solution or reagent at every step.

#### A1) Procedure for horizontal staining of hematological smears and cytological samples (on a staining rack)

1.	Dry (fix) the blood smear or cytology sample on the slide	
2.	Place the sample in the horizontal position and cover it with 1 ml of <b>undiluted Wright's solution</b>	1 min
3.	Add 1 mL of Buffer solution pH 6.8 or pH 7.2., gently stir and let it react	4 min
4.	Rinse with Buffer solution, pH 6.8 or pH 7.2 through two exchanges	2 exchanges, 1 min each
5.	Dry the sample	

#### A2) Procedure for vertical staining of hematological smears and cytological samples (in a staining jar)

1.	Dry (fix) the blood smear or cytology sample on the slide	
2.	Immerse the sample into <b>undiluted Wright's solution</b>	3 min
3.	Immerse the sample into <b>Wright's working solution for vertical staining</b>	6 min
4.	Rinse with Buffer solution, pH 6.8 or pH 7.2 through two exchanges	2 exchanges, 1 min each
5.	Dry the sample	

#### A3) Procedure of staining hematological smears and cytological samples in automatic stainer

1.	Dry (fix) the blood smear or cytology sample on the slide	
2.	Immerse the section into <b>undiluted Wright's solution</b>	3 min
3.	Immerse the section into <b>Wright's working solution for staining in automatic stainer</b>	6 min
4.	Rinse with Buffer solution, pH 6.8 or pH 7.2	1 min
5.	Rinse under tap water	2 min
6.	Dry the sample	

It is recommended to use immersion oil during microscopic analysis with magnification over 40x.

## Result

	Using pH 6,8 buffer solution	Using pH 7,2 buffer solution
Nucleus	Red – purple	Blue – purple
Lymphocyte cytoplasm	Blue	Blue
Monocyte cytoplasm	Blue – grey	Blue – grey
Neutrophil granules	Light purple (stara eng uputa kaže "bright")	Light purple
Eosinophil granules	Dark red to red – brown	Red to red – brown
Basophil granules	Dark purple to black	Dark purple to black
Thrombocytes	Purple	Purple
Erythrocytes	Reddish	Reddish – grey

## Limitations

This product is intended for professional laboratory use for diagnostic purposes only. Deviations from the staining procedure described in this Instruction for use may cause differences in staining results.

## Sample preparation and diagnostics

Use only appropriate instruments for collecting and preparing the samples. Process the samples using modern technology and mark them clearly. Be sure to follow the manufacturer's handling instructions. To avoid errors, staining and diagnosis can only be carried out by qualified personnel. Use a microscope equipped according to medical diagnostic laboratory standards. To avoid an incorrect staining result, it is advised to use a positive and negative control. If a serious incident occurs during use of this product or as a result of its use, please report it to the manufacturer or authorized representative and competent authority.

## Safety at work and environmental protection

Handle the product in accordance with occupational health and environmental protection guidelines. Used and expired solutions must be disposed of as special waste following national guidelines. Reagents used in this procedure can pose a danger to human health. The examined tissue samples are potentially infectious, and it is necessary to take the measures needed to protect human health in accordance with the guidelines of good laboratory practice. It is mandatory to read and act according to the information and warning signs printed on the product label and in the Safety Data Sheet, which is available on request.

## Storage, stability, and shelf life

Upon receipt, store the product in a dry place and well-closed original packaging at a temperature of +15 °C to +25 °C. Do not freeze or expose to direct sunlight. After first opening, the product can be used until the specified expiry date, if stored properly. The expiration date is printed on the product label.

## References

1. Beck, R.C. (1938): *Laboratory Manual of Hematological Technique*, Philadelphia, W.B. Saunders & Co.
2. Dacie, J. et Lewis S. (1995): *Practical haematology*, 4<sup>th</sup> ed., London, Churchill Livingstone.
3. Garcia, L. S. (2001): *Diagnostic Medical Parasitology*, 4<sup>th</sup> ed., Washington, D.C., ASM Press.
4. Giemsa, G. (1922): Das Wesen der Giemsa-Färbung, *Zentralb f Bakt*; 89, str. 99-106.
5. Kiernan, J.A. (2008): *Histological and histochemical methods: Theory and Practice*, 4<sup>th</sup> ed., Bloxham, Scion Publishing Ltd.
6. May, R. et Grünwald L. (1909): Über die Färbung von Feuchtpreparaten mit meiner Azur-Eosine methode, *Deutsche med Xschr*, 35, str. 1751-1752

## Warnings and precautions regarding the materials contained in the product:

	H225	Highly flammable liquid and vapor.
	H301 + H311 + H331	Toxic if swallowed, if on skin or if inhaled.
	H370	Causes damage to organs (eyes).
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P233	Keep container tightly closed.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P301 + P310	IF SWALLOWED: call immediately POISON CENTER/doctor.
	P302 + P352	IF ON SKIN: wash with plenty of water
	P304 + P340	IF INHALED: remove person to fresh air and keep comfortable for breathing.
	P308 + P311	IF exposed or concerned: get medical advice/attention.

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 Manufacturer	 Batch code	 Consult Instructions for use	 European conformity
 Date of manufacture	 Catalogue number	 Caution	 Unique device Identifier
 Use-by date	 Temperature limit	 <i>In vitro</i> diagnostic medical device	

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Version	Description / reason for change	Date
7	Revised acc. to Regulation (EU) 2017/746 - IVD	23.02.2026.