

HEMATOXYLIN G2

CE IVD *In vitro* diagnostic medical device

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

Hematoxylin acc. to Gill for nuclear staining

Moderate intensity new generation reagent for progressive staining in histopathology, cytology and counterstaining in immunohistochemistry

INSTRUCTIONS FOR USE

BASIC UDI number	385889212HPC30708STARVF				
EMDN code	W01030708				
REF Catalog number	Volume	UDI-DI number	REF Catalog number	Volume	UDI-DI number
HEMG2-OT-100	100 mL	03858888823337	HEMG2-OT-1L	1000 mL	03858888820046
HEMG2-OT-500	500 mL	03858888823344	HEMG2-OT-2.5L	2500 mL	03858888823351



Intended use and test principle

BioGnost's Hematoxylin G2 is a high stability reagent and one of formulations of hematoxylin used in histopathology and cytology for a more precise nuclear cell staining. Compared to Hematoxylin G1, Hematoxylin G2 stains preparations with greater intensity due to double amount of hematoxylin dye. That results in shorter waiting periods. Hematoxylin G2 is ideal for darker, more intense staining of cellular nuclei of cytological smears or histological preparations, although it is also often used for contrast staining in immunohistochemistry. Unlike other hematoxylin formulations, hematoxylin acc. to Gill dyes goblet cells in the small intestine epithelium and the respiratory epithelium of the respiratory tract. Hematoxylin is extracted from logwood (*Haematoxylon campechianum* L.). Hematoxylin oxidates to hematein and binds with metal ions (mordants), hematein turns into irreplaceable nuclear dye. Positively charged hematein-mordant complex then binds with negatively charged phosphate ions of the DNA's nucleus, creating characteristic blue coloration. Hematoxylin acc. to Gill is a specific hematoxylin solution used for staining goblet cells and chromatins of both normal and abnormal tissue samples or cytological smears. BioGnost's Hematoxylin G1, G2 and G3 are half-oxidized, stabilized with glycols and contain aluminum ions. They stain nuclear membrane, nucleoplasm and nucleolus exceptionally well.

Product description

- **HEMATOXYLIN G2** – Reagent used for progressive nuclear staining in histology, cytology and contrast staining in immunohistochemistry. It contains optimally oxidized hematoxylin, glycolic stabilizers and antioxidants.

Additional reagents and materials that can be used in this method

- Fixatives such as BioGnost's neutral buffered formaldehyde solutions: Formaldehyde NB 4%, Formaldehyde NB 10%
- Dehydrating/rehydrating agent, such as BioGnost's alcohol solutions: Histanol 70, Histanol 80, Histanol 95 and Histanol 100
- Clearing agent, such as BioClear xylene or its aliphatic hydrocarbon substitutes, such as BioClear New
- Infiltration and embedding agent, such as BioGnost's granulated paraffin BioWax Plus 56/58, BioWax 56/68, BioWax Blue
- Covering agents for microscopic sections and mounting cover glass, such as BioGnost's BioMount, BioMount High, BioMount M, BioMount New, BioMount DPX, BioMount DPX High, BioMount DPX Low, BioMount C, BioMount Aqua
- 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
- Reagents for nuclear staining such as BioGnost's eosin solutions
- Nuclear bluing agents, such as poput BioGnost's Bluing reagent or Scott's solution

Preparation of histological sections for staining

- Fix (Formaldehyde NB 4%, Formaldehyde NB 10%) and process the tissue sample
- Embed the tissue in a paraffin block (BioWax 52/54, BioWax 56/58, BioWax Plus 56/58, BioWax Blue)
- Cut the paraffin block into 4-6 μ m thin slices and mount on a VitroGnost microscope slide

Hematoxylin and eosin (HE) manual* staining procedure, progressive

1.	Deparaffinize in xylene (BioClear) or xylene substitute (BioClear New)	3 exchanges, 2 min each
2.	Rehydrate in 100% alcohol (Histanol 100)	2 exchanges, 5 and 3 min
3.	Rehydrate in 95% alcohol (Histanol 95)	2 min
4.	Rehydrate in distilled/demineralized water	2 min
5.	Stain using Hematoxylin G2	3-5 min
	If sedimentation occurs or a metallic sheen forms in Hematoxylin G2, filter the reagent before use	
6.	Immerse the slide in distilled/demineralized water until dye is no longer being released from the slide	
7.	Make nuclei turn blue using Scott's solution or Bluing reagent	1 min
	Note: Finish the process of bluing after the nuclei turn blue. If no Scott's solution or Bluing reagent is available, rinse the sections under tap water for 3-5 minutes	
8.	Immerse in distilled/demineralized water	
9.	If using an alcoholic eosin solution immerse the samples into 95% alcohol (Histanol 95). If using an aqueous eosin solution, skip this step.	
10.	Stain using one of eosin contrast solutions until optimal staining is achieved	15 sec to 2 min
	Note: Staining the sections in eosin alcoholic solutions causes intensive eosinophil color to show much faster (in under 15 seconds' time). Recommended incubation time for eosin aqueous solutions is 90 seconds to 2 minutes	
11.	Rinse under tap water Note: if using an alcoholic eosin contrast solution, skip this step	2 min
12.	Dehydrate in 95% alcohol (Histanol 95)	2 exchanges, 10-15 dips
13.	Dehydrate in 100% alcohol (Histanol 100)	3 exchanges, 10-15 dips

14. Clear in xylene (BioClear) or xylene substitute (BioClear New)	2 exchanges, 2 min each
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Immediately after clearing apply an appropriate BioMount medium for covering/mounting on the section. If BioClear xylene was used, use one of BioGnost's mounting xylene-based media (BioMount, BioMount High, BioMount M, BioMount DPX, BioMount C, or universal BioMount New). If BioClear New xylene substitute was used, the appropriate covering agent is BioMount New. Cover the section with VitroGnost cover glass.

* Hematoxylin and eosin (HE) automatic staining procedure is available Instructions for use for the following BioGnost products: Hem Diff, Hem Diff Strong and BioBluing buffer.

Result

Nuclei – dark blue

Cytoplasm, collagen, elastin, erythrocytes – hues of pink (red – pink if staining with Eosin Contrast)

Goblet cells – dark blue

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.

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. Gill, G.W., Frost, J.K, Miller, K.A. (1974): A new formula for half-oxidized hematoxylin formula that neither overstains nor requires differentiation. Acta Cytol. 1974;18:300-301.
2. Gill, G.W. (2006): Enviro-Pap: an environmental friendly, economical, and effective Pap stain. Lab. Med. 37: str. 105-108.
3. Papanicolaou, G.N. (1954): A new procedure for staining vaginal smears. Science. 95: str. 438-439.
4. Sheehan, D.C. et Hrapchak, B.B. (1980): Theory and Practice of Histotechnology, 2nd ed., St. Louise: CV Mosby Co.

Warnings and precautions regarding the materials contained in the product:

	H302	Harmful if swallowed.
	P280 P301 + P312	Wear protective gloves/protective clothing/eye protection/face protection. IF SWALLOWED: call POISON CENTER/doctor if you feel unwell.

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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
12	Revised acc. to Regulation (EU) 2017/746 - IVDR	23.02.2026.