

GRAM LUGOL SOLUTION

IVD *In vitro* diagnostic medical device



Non-stabilized Lugol's solution

Instructions for use in microbiology for Gram staining

INSTRUCTIONS FOR USE

REF Catalogue number: GL-OT-100 (100 ml) GL-OT-250 (250 ml) GL-OT-500 (500 ml) GL-OT-1L (1000 mL)

Introduction:

Gram staining is a method of differentiating bacterial species and it is commonly known and used in microbiology. It is also one of the most frequently used diagnostic methods in hospital and clinical laboratories. Gram staining differentiates bacteria into two groups: Gram-positive and Gram-negative. That division is based on the two groups' bacterial membrane structural differences, i. e. their capability of retaining the dye.

BioGnost's Gram Lugol solution enhances that capability. It consists of aqueous iodine solution and potassium iodide. During the Gram staining process the solution enables the dye to enter the bacterial cell and create insoluble iodine and primary dye complex. That enables dye retaining and subsequent Gram-positive bacteria identification.

Product description:

GRAM LUGOL SOLUTION - Solution for use in microbiology for Gram staining.

Other preparations and reagents that may be used:

- Primary dye solution for differential Gram staining, such as BioGnost's Gram Crystal Violet 1% solution.
- Iodine solution used for differential Gram staining, such as stabilized BioGnost's Gram Lugol solution
- Destaining solution used in differentiating Gram staining, such as BioGnost's Decolorization solutions 1, 2 or 3.
- Counterstain solution for differentiating Gram staining, such as BioGnost's Gram Safranin solution
- Glass slides used in microbiology, such as VitroGnost ECONOMY GRADE or glass slides used in cytology, such as VitroGnost STANDARD GRADE or high quality glass slides used in histopathology, such as VitroGnost SUPER GRADE or one of more than 30 models of VitroGnost glass slides.
- BioGnost's immersion media, such as Immersion oil, Immersion oil, types A, C, FF, 37, or Immersion oil Tropical Grade

Preparing the sample for staining

- Transfer the sample on a clean glass slide using a sterilized smear loop.
Note: Bodily fluids, discharge, pus, and liquid or solid bacterial culture can be used as samples.
- Spread the sample evenly across the glass slide using 1-2 drops of saline solution.
- Fix the sample using the Bunsen burner after drying by wriggling the glass slide through the cone of flame for 2-3 times.
- Cool the glass slide and begin the process of staining.

Sample staining procedure

1.	Stain with Gram Crystal Violet 1% solution	1 min
2.	Pour excessive dye off the section.	
3.	<ul style="list-style-type: none"> • Carefully rinse the section with Gram Lugol solution (stabilized Gram Lugol solution may also be used) 	
4.	Fix the dye by treating the section with Gram Lugol solution (stabilized Gram Lugol solution may also be used)	1 min
5.	<ul style="list-style-type: none"> • Rinse the section carefully with distilled/demineralized water. 	5 seconds
6.	<ul style="list-style-type: none"> • Treat the preparation using Gram Decolorizer 2 solution. • End the process when the section turns grey-blue. 	10-15 seconds
	Note: It is possible to use Gram Decolorizer solutions 1 and 3. Caution! Gram Decolorizer 3 solution reacts extremely quickly. By overly treating with Decolorizer solution, the dye will be washed away from Gram-positive bacteria as well.	
7.	<ul style="list-style-type: none"> • Rinse the section carefully with distilled/demineralized water. 	5 seconds
8.	<ul style="list-style-type: none"> • Treat the preparation using Gram Safranin solution. 	1 min
9.	<ul style="list-style-type: none"> • Rinse the section carefully with distilled/demineralized water. 	5 seconds
10.	<ul style="list-style-type: none"> • Dry the section using filter paper or let it dry by air. 	
11.	<ul style="list-style-type: none"> • Add a drop of immersion oil on the section (Cedar or Immersion oil). 	
12.	<ul style="list-style-type: none"> • Examine the section under immersion lens. 	

Result

Gram-positive bacteria - blue-purple

Gram-negative bacteria - red

Note:

Microbiology staining procedures are not standardized and they depend on standard operating procedures of individual laboratories and the experience of the personnel conducting the staining procedure. Intensity of staining depends on the period of immersion in the dye. Depending on personal requests and standard laboratory operating procedures, sample processing and staining can be carried out according to other protocols.

Preparing the sample and diagnostics

Use only appropriate instruments for collecting and preparing the samples. Process the samples with modern technology and mark them clearly. Follow the manufacturer's instructions for use. In order to avoid mistakes, the staining procedure and diagnostics should only be conducted by authorized and qualified personnel. Use only microscope according to standards of the medical diagnostic laboratory. In order to avoid an erroneous result, a positive and negative check is advised before application.

Safety at work and environmental protection

Handle the product in accordance with safety at work and environmental protection guidelines. Used solutions and out of date solutions should be disposed of as special waste in accordance with national guidelines. Chemicals used in this procedure could pose danger to human health. Tested tissue specimens are potentially infectious. Necessary safety measures for protecting human health should be taken in accordance with good laboratory practice. Act in accordance with signs and warnings notices printed on the product's label, as well as in BioGnost's material safety data sheet which is available on demand.














Storing, stability and expiry date

Keep Gram Lugol solution in a tightly sealed original packaging at temperature of 15 to 25 °C. Keep in dry places, do not freeze and avoid exposing to direct sunlight. Date of manufacture and expiry date are printed on the product's label.

References

1. Carson, F. L., Hladik, C. (2009): *Histotechnology: A Self-Instructional Text*, 3rd ed., Chicago: ASCP Press
2. Kiernan, J. A. (2008): *Histological and Histochemical Methods*, 4th ed., Bloxham: Scion Publishing Ltd.

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	Refer to the supplied documentation		Storage temperature range		Number of tests in package		Product code		European Conformity
	Refer to supplied instructions		Keep away from heat and sunlight		Valid until		Lot number		Manufacturer
	For <i>in vitro</i> diagnostic use only		Keep in dry place		Caution - fragile				

 BIOGNOST Ltd.
Medjugorska 59
10040 Zagreb
CROATIA
www.biognost.com

