




Net Educational Video for Residents

Gram stain

Vinitha Panicker¹, Prateek Nayak¹, Radhika Krishna¹, Nandhetha Sreenivaasan¹ , Jacob Thomas¹, Velayudhan Sreedevan¹, Gopikrishnan Anjaneyan¹, Soumya Jagadeesan¹, Sajini Lekshmi¹

¹Department of Dermatology, Venereology, and Leprosy, Amrita Institute of Medical Sciences, Kochi, Kerala, India.

***Corresponding author:**

Prateek Nayak,
Department of Dermatology,
Venereology and Leprosy,
Amrita Institute of Medical
Sciences, Kochi, Kerala, India.
nayakprateek@rocketmail.com

Received: 26 April 2022
Accepted: 12 May 2022
Epub Ahead of Print: 30 June 2022
Published: 14 April 2023

DOI
10.25259/JSSTD_22_2022

Video available online at:
https://doi.org/10.25259/JSSTD_22_2022

Quick Response Code:



ABSTRACT

Gram staining is a differential staining technique performed when a bacterial infection is suspected. The technique classifies bacteria into two broad groups: Gram negative and gram positive bacteria. In this net educational video, we have demonstrated the method of Gram staining.

Keywords: Gram stain, Bacterial infection, Differential staining

INTRODUCTION

Gram staining [Video 1] is a widely used staining technique in the field of dermatology and is named after the Danish bacteriologist Hans Christian Gram.^[1]

INDICATION

Clinical suspicion of bacterial infection.

PROCEDURE

Preparation of the smear

An inoculation loop is used to transfer a drop of suspended culture to the microscope slide, smeared as a thin film, and either air-dried or over a gentle flame.

Gram staining

1. Primary stain – Crystal violet/methylene blue – wash after 60 seconds.
2. Mordant – Gram's iodine – wash after 60 seconds.
3. Decolorizer – Acetone/acetone-ethanol mixture – wash in 5 seconds.^[1,2]
4. Counterstain – Carbol fuchsin/safranin – wash after 30 seconds.

INTERPRETATION OF THE RESULTS

- Initial slide examination under low-power magnification to evaluate the smear distribution and then under oil immersion objective^[1,2]
- Gram-positive organisms are either purple or blue, while gram-negative organisms are either pink or red
- Bacilli are rod shaped, while cocci are spherical

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2023 Published by Scientific Scholar on behalf of Journal of Skin and Sexually Transmitted Diseases



Video 1: Gram staining technique.

Video available online at: https://doi.org/10.25259/JSSD_22_2022

CONCLUSION

Gram stain differentiates bacteria based on the differential staining properties of bacterial cell wall. Bacteria with thick peptidoglycan layer stains blue to purple and are treated as gram positive, while bacteria with thin peptidoglycan layer stains red to pink and are treated as gram negative.^[2]

Acknowledgment

We are grateful to Dr. Fairoz CP (Assistant Professor, Department of Microbiology) and Dr. Mohammed Althaf V

(Junior Resident, Department of Dermatology), Government Medical College, Kozhikode, for the images of Gram-positive and Gram-negative organisms, respectively. Background music used in the video is under a creative commons license. (Music by Whitesand - Eternity <https://www.youtube.com/watch?v=X5c83Uioxj8>, <https://www.youtube.com/c/WhitesandComposer/>).

Declaration of patient consent

Not required as there are no patients in this article.

Financial support and sponsorship

Nil.

Conflicts of interest

Dr. Vinitha Panicker and Dr. Soumya Jagadeesan are on the editorial board of the Journal.

REFERENCES

1. Tripathi N, Sapra A. Gram Staining. Treasure Island, FL: StatPearls Publishing; 2021.
2. Smith AC, Hussey MA. Gram Stain Protocols; 2005. Available from: <https://asm.org/Protocols/Gram-Stain-Protocols> [Last accessed on 2022 May 12].

How to cite this article: Panicker V, Nayak P, Krishna R, Sreenivaasan N, Thomas J, Sreedevan V, *et al.* Gram stain. *J Skin Sex Transm Dis* 2023;5:60-1.