



SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Sathy Main Road, SNS Kalvi Nagar,
Saravanampatti Post, Coimbatore - 641 035,
Tamil Nadu.



The Ziehl-Neelsen acid fast staining

Tuberculosis and leprosy causing pathogens can be stained with the help of this technique. Organisms of genus *Mycobacterium* can be stained by acid-fast staining method. The lipid component in the acid fast bacteria is responsible for this property.

Steps:

- i. Bacterial smear is prepared on a slide.
- ii. Carbofuchsin is added on the smear and heated
- iii. After draining and rinsing, it is decolorized using 3% HCl in 95% ethanol and rinsed again.
- iv. It is then stained with methylene blue dye.

Result interpretation:

Those bacteria belonging to the genus *Mycobacterium* will only retain the bright red color. Others will lose the red carbofuchsin color.

MCQs

1. An example of cationic dye is?

- a. Malachite green
- b. Eosin
- c. Picric acid
- d. All of the above

2. Simple staining is used for?

- a. Studying cellular organelles
- b. Revealing basic cell shapes
- c. Differentiating two different types of cell
- d. Understanding the working of mitochondria

3. Gram staining is the type of?

- a. Simple staining
- b. Differential staining
- c. Acid-fast staining

d. Special staining

4. Gram staining is based on?

- a. Amount of lipid present in cell wall
- b. Porosity of cell membrane
- c. Amount of peptidoglycan present in cell wall
- d. Type of flagella bacteria has

5. Correct steps for gram staining can be?

I. Addition of iodine mordant

II. Addition of crystal violet

III. Addition of safranin

II – I – IV – III

III – I – IV – II

II – IV – I – III

III – IV- I – II

6. Type of dyes used in the Ziehl-Neelsen acid fast staining?

I. Crystal violet

II. Carbofuchsin

III. Safranin

IV. Methylene blue

- a. I, II
- b. I, III
- c. II, III
- d. II, IV

7. Match the following types of staining with their correct applications-

i. Gram staining	A. Revealing basic cell shape
ii. Acid fast staining	B. Differentiating between gram positive and gram negative bacteria
iii. Simple staining	C. Identification of mycobacterium

- a. i-C, ii-B, iii-A
- b. i-B, ii-C, iii-A
- c. i-B, ii-A, iii-C
- d. i-A, ii-B, iii-C