Albert's Metachromatic Stains - Kit

K002

Intended use

Albert's Metachromatic Stains Kit is used for observing metachromatic granules.

Kit Contents

S001	Albert's Stain A	125ml
S002	Albert's Stain B	125ml

Composition**

Ingredients

Albert's stain A(S001)	-
Toluidine blue	1.50 gm
Malachite green	0.20 gm
Glacial acetic acid	1.00 ml
Ethyl alcohol, 95%	2.00 ml
Distilled water	100.0 ml
Albert's Stain B(S002)	-
Iodine crystals	2.00 gm
Potassium iodide	3.00 gm
Distilled water	300.0 ml

**Formula adjusted, standardized to suit performance parameters

Directions

1. Prepare a thin smear on a clean dry glass slide.
2. Allow it to dry and fix with gentle heat.
3. Stain with Alberts Stain A (S001) for 3-5 minutes.
4. Drain the solution, do not wash.
5. Apply Alberts Stain B (S002) for 1 minute.
6. Rinse with water, blot dry and examine under oil immersion objective.

Principle And Interpretation

Albert's Metachromatic Stain demonstrates the presence of metachromatic granules found in *Corynebacterium diphtheria.* The storage granules in this bacterium is called metachromatic granules because it exhibits the property of metachromasia, wherein the granules appear in a colour other than the colour used for staining. The granules are made up of polymetaphosphates and are known by various other names such as volutin bodies, Babe-Ernst granules or polar bodies. The bacterium produces the granules in abundance when grown on nutrient rich medium such as Loeffler's serum slope. The granules stain purple-black against the light green counterstained cytoplasm. This helps to distinguish diphtheria from most of the short nonpathogenic diphtheroid which lack granules. There are two reagents that are used in the staining process: Albert's A solution and Albert's B solution.

Albert's A solution consists of Toluidine blue, malachite green, glacial acetic acid, and ethyl alcohol. Albert's B solution contains Iodine and Potassium iodide in water. Albert stain A have two dyes 'Toluidine blue' and 'Malachite green' both of which are basic dyes with high affinity for neutral tissue components like cytoplasm and the pH of Albert stain A is adjusted to acidic by using 'Glacial acetic acid', which is acidic for cytoplasm (as it is neutral) but basic for volutin granules (as the pH of volutin granules are highly acidic). Therefore, When Albert stain A applied to the cell the volutin granules stain by Toluidine blue while cytoplasm is green by Malachite green. Due to the metachromatic property of volutin granules when stained with Toluidine blue dye they appear Red in color. When Albert stains B i.e. the Iodine solution is applied due to the effect of Iodine the metachromatic property is not observed and Granules appear blue-black in color.

Type of specimen

Clinical samples; food & dairy samples; Water samples

Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines. For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines. For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards. After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic Use only. For professional use only. Read the label before opening the container. Wear protective gloves/protective clothing/ eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets

Limitations

1. Washing of the stain should be avoided unlike other staining methods because malachite green is highly soluble in water and quality of stain fades if washing incorporated.
2. Albert's Metachromatic Staining can only be used to stain the metachromatic granular bodies and not any inclusion in cytoplasmic membrane.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature

Quality Control

- **Microscopic examination :** Metachromatic staining was carried out and staining characteristics of the organism is observed under microscope by using oil immersion lens.
- **Results :** The metachromatic granules of Diphtheria bacilli stain black and the cytoplasm stains light green.

Storage and Shelf Life

Store between 10-30°C in tightly closed container and away from bright light. Use before expiry date on label. On opening, product should be properly stored in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques.

Reference

1. Collee J. G./Fraser A.G., Marmion B.P./Simmons A., 1996, 14th ed., MACKIE McCARTNEY, PRACTICAL MEDICAL MICROBIOLOGY: 45(803-804).
2. George Clark et al, 1981, 4th ed., Staining procedures: 17(402-406).
3. Godkar B. P., 1996, Textbook of medical laboratory technology: 23(315).

Storage temperature

Do not use if package is damaged

In vitro diagnostic medical device

CE Marking

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