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Microbiology Lab

((Fungal Stain))

Lab/9

2 stage

By

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Fungal Stain:

A fungal stain test is a laboratory test used to detect the presence of fungi in a biological specimen, such as blood, tissue, or body fluids. The test involves staining the specimen with a special dye that binds specifically to fungal cell components, making them visible under a microscope.

There are several types of fungal stain tests. The most common ones are **the potassium hydroxide (KOH) test**, **the calcofluor white stain**, and **the periodic acid-Schiff (PAS) stain**.

The KOH test involves adding a sample to a slide containing a drop of potassium hydroxide, which breaks down non-fungal cells, leaving fungal cells visible for identification. Calcofluor white stain and PAS stain are fluorescent dyes that attach to the fungal cell wall, making them visible under a microscope. A fungal stain test uses special dyes to detect fungal cells in a biological specimen. The test is important for the diagnosis of fungal infections in immunocompromised patients and can help improve treatment outcomes.

The Fungal stain test is used to diagnose:

- 1- Fungal infections
- 2- Immunocompromised patients
- 3- Specific fungal species
- 4- Prompt treatment



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Preparation for Fungal Stain Test :

- 1- Specimen collection: A biological sample such as blood, tissue, or body fluids is collected from the patient by a healthcare professional .
- 2-Sample handling: The sample is handled carefully to prevent contamination and degradation before analysis .
- 3-Stain preparation: The staining solutions required for the test are prepared and checked for quality and accuracy .
- 4-Microscope preparation: The microscope is set up and checked for proper functioning before analysis.

Procedure for Fungal Stain Test:

- 1-Sample preparation: The biological specimen is prepared for staining by cleaning and drying the slide and then applying the sample to the slide.
- 2-Staining: The slide is stained with a special dye that binds specifically to fungal cell components, such as potassium hydroxide (KOH) or calcofluor white stain, which helps visualize fungal cells under a microscope.
- 3-Microscopic analysis: The slide is examined under a microscope to detect the presence of fungal cells. The fungal cells appear as bright, refractile objects under phase-contrast microscopy or fluorescent objects under fluorescent microscopy.
- 4-Interpretation of results: The results are interpreted by a trained healthcare professional who examines the slide under the microscope and reports the findings. The test results are reported as positive or negative.



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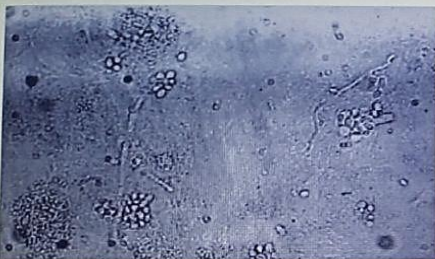
Understanding the Fungal Stain Test Results:

1-Positive result: A positive result indicates that fungal cells are present in the sample. The type of fungus may also be identified.

2-Negative result: A negative result indicates no fungal cells were detected in the sample. However, a negative result does not rule out the possibility of a fungal infection entirely, and additional tests may be required to confirm the diagnosis .

3-False-positive result: In rare cases, the test may produce a false-positive result, indicating the presence of fungal cells when no infection is there. This may occur due to contamination or other factors .

4-False-negative result: In some cases, the test may produce a false-negative result, indicating the absence of fungal cells when an infection is present. This may occur because the sample was not handled or stored properly or the concentration of fungal cells in the sample was too low.



Yeast and hyphae on KOH wet mount



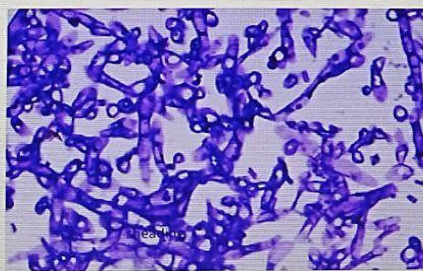
Negative staining of Cryptococcal capsules



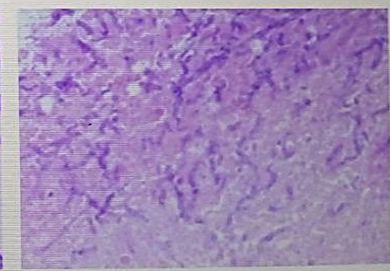
Aspergillus flavus on LPCB



Yeast on Calcofluor white stain



PAS stain showing fungal hypha



HE stain showing *Aspergillus* spp.