PERIODIC ACID SCHIFF KIT

Intended Use
The Periodic Acid-Schiff (PAS) staining technique is employed to illustrate carbohydrates and components of fungal cell walls. This method is effective for the detection of glycogen, polysaccharides, and mucin within tissue samples, applicable to both formalin-fixed and paraffin-embedded sections as well as frozen tissue specimens.

Principle and Results
The periodic acid within the stain kit engages in a chemical reaction with carbohydrates within the specimen through an oxidative process. This reaction between polysaccharides and periodic acid leads to the formation of an oxidized compound, specifically an aldehyde. Subsequently, the aldehyde interacts with the Schiff's reagent, producing a distinctive purple-magenta color. Furthermore, the presence of intracellular or extracellular mucin is indicated by a pink hue. The application of hematoxylin as a counterstain effectively stains cellular nuclei, while a light green counterstain is preferred for the visualization of fungal organisms.

Specimen Collection
Deparaffinized and re-hydrated tissue sections on positively charged slides.

Precautions
PAS kit should be used by properly trained individuals. Refer to SDS for complete warnings, precautions, hazard and precautionary statements, and disposal information.

Autostainer Configuration
This stain kit may be adapted for use on most open platform autostainers when purchased in larger sizes.

Quality Control
Ethos Biosciences test each lot using appropriate tissue controls: Liver, skin, aorta, or positive fungal control. Followed all recommended Quality Control procedures detailed within your laboratory.

Interpretation

Glycogen	Magenta
Basement Membrane	Red to purple
Mucin	Magenta
Nuclei	Blue (with hematoxylin)

PROCEDURE						
#	ACTION	SOLUTION	HEAT	TIME		DETAILS
				MIN	SEC	
1	DEPARAFFINIZE	XYLENE OR SUB, 2 CHANGES	–	5	–	5 MINUTES EACH CHANGE OR AS REQUIRED
2	HYDRATE	GRADED ALCOHOLS	–	1	–	1 MINUTE EACH CHANGE OR 10 DIPS PER GRADED ALCOHOL
3	RINSE	RUNNING DI WATER	–	1	–	OR THREE CHANGES OF DI WATER
4	IMMERSE	0.5% PERIODIC ACID	–	5	–	
5	RINSE	RUNNING DI WATER	–	–	10	OR THREE CHANGES OF DI WATER
6	IMMERSE	SCHIFF'S REAGENT	–	10-15	–	
7	RINSE	DI WATER	–	–	10	OR THREE CHANGES OF DI WATER
8	WASH	TAP WATER	–	10	–	WARM RUNNING TAP WATER. ALLOW COLOR TO DEVELOP
9	COUNTERSTAIN	HEMATOXYLIN*	–	1	–	
	COUNTERSTAIN	LIGHT GREEN*	–	–	30	
10	RINSE	WATER	–	*	–	*5 MIN RUNNING TAP WATER FOR HEMATOXYLIN. QUICKLY RINSE IN DI WATER FOR LIGHT GREEN.
11	DEHYDRATE	GRADED ALCOHOLS	–	–	–	1 MINUTE EACH CHANGE OR 10 DIPS PER GRADED ALCOHOL
12	CLEAR	XYLENE OR SUB, 2 CHANGES	–	5	–	5 MINUTES EACH CHANGE OR AS REQUIRED
13	COVERSLIP	RESINOUS MEDIUM	–	–	–	

** HEMATOXYLIN USED FOR NUCEAR STAINING WHILE LIGHT GREEN IS UTILIZED AS BACKGROUND STAINING IN FUNGAL SPECIMENS

Limitations

1. Schiff reagent is strongly affected by light and release of sulfur dioxide gas. To extend shelf light, shield solution from light and do not use in open chambers for long periods of time. Keep solution tightly sealed.
2. DO NOT USE tissue fixed in glutaraldehyde. This will give false positive results.

Pro-Tips

1. Test Schiff Reagent before use: pour 10 mL of 37% formalin into a beaker or Coplin jar, add a few drops of Schiff's reagent. There should be a rapid turn of color from clear to red purple. A delayed reaction and a deep blue-purple color is due to deterioration of Schiff's. Replace with a fresh bottle.
2. It is best practice to use "same slide control". This refers to a tissue section stained with a known positive control on the same slide for the special stain being used, allowing pathologists to perform a direct comparison.
3. A DI was after the Schiff's reagent ensures that the excess Schiff's is washed off, preventing non-specific background staining.
4. Proper rise in WARM running tap water is crucial to Schiff's reaction, creating a magenta color in the positive areas. A weak tap water rinse after Schiff's will result in poor or uneven staining OR a false positive result.
5. If hematoxylin is used as a counterstain, it is important not to overstain. Overstaining will affect the Schiff magenta color. If this happens, sections can be differentiated with a quick dip in 1% acid alcohol and rising in warm water for roughly two minutes.

References

1. Sheehan D, Hrapchak B, Theory and practice of Histotechnology, 2nd Ed, 1980, pp 164-166, Battelle Press, Ohio
2. Bancroft J, Stevens A, Theory and Practice of Histological Techniques, 2nd Ed, 1982, pp 188-190, Churchill Livingstone, NY
3. PAS Staining Protocol. LabCE presented by Media Lab. Retrieved 2 February 2025
4. Baniya, Sushmita, Periodic acid-Schiff (PAS) Staining: Principle, Procedure, and Application.

PRODUCT INFORMATION

CAT. #	DESCRIPTION
6262	PAS Kit, 3x16oz
7016	Hematoxylin, 16oz
3376	Periodic Acid 0.5%
3378	Schiff's Reagent

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