PYR DISKS

- For in vitro use only - Catalogue No. DP95 / DP95K

Our PYR Disks are intended for the preliminary rapid characterization of β-hemolytic, gram-positive cocci.

Organisms possessing the enzyme L-pyrrolidonyl arylamidase can hydrolyze the disk substrate L-pyrrolidonyl-β-naphthylamide to release L-pyrrolidone and ß-naphthylamide. Visual detection can be achieved by the addition of PYR / LAP Reagent (Dalynn RP95); the active ingredient, p-dimethylaminocinnamaldehyde, combines with the end-product ß-naphthylamide to form a **red** Schiff base. A yellow to red color change indicates a positive reaction.

PYR disks are mainly used for the presumptive identification of group A β-hemolytic streptococci (i.e. *Streptococcus pyogenes*). Yajko et al. reported a high sensitivity (96.4%) and higher specificity (98.7%) for the PYR hydrolysis test as compared to traditional bacitracin susceptibility tests. Among the commonly encountered β-hemolytic streptococci only *S. pyogenes* produces a positive reaction. The accuracy and rapidity of the PYR test allows for quicker reporting of results for those cultures screened for group A streptococci and can result in better patient care and treatment.

PYR disks can also be used for the presumptive identification of *Enterococcus* species. The most accurate presumptive identification of a catalase-negative gram-positive coccus as an *Enterococcus* strain is by demonstrating that the unknown strain is PYR and LAP positive and grows in 6.5% NaCl, and at 45°C.

Recommended Procedure

1. Place a PYR Disk into a suitable sterile container and allow the disk to warm to room temperature.
2. Rehydrate the disk with a small drop of sterile purified water or phosphate buffer (pH 7.5).
3. Inoculate the disk surface with several pure colonies of the unknown test organism derived from an 18-24 hour culture on a blood agar plate.
4. Incubate at room temperature for 10 minutes.
5. Add one drop of PYR / LAP Reagent to the inoculated disk.
6. Interpret results within one minute.

Interpretation of Results

Positive: Cherry red color
Group A β-streptococci (*S. pyogenes*) and group D enterococci

Negative: Orange or yellow (no change)
Group B streptococci, viridans streptococci, β-streptococci (not A, B, or D)

Organism	Catalase	LAP	PYR	Esculin	6.5% NaCl	Vanco
β-*Streptococcus*						
S. pneumonuae	-	+	V	V	-	S
S. pyogenes (A)	-	+	+	+	-	S
Other β-*Strep*	-	V	-	-	-	S
Enterococcus spp.	-	+	+	+	V+	S
Abiotrophia						
A. adiacens	-	+	V	-	-	S
A. defectiva	-	+	V	-	-	S
Aerococcus						
A. viridans	-	-	+	V	+	S
A. urinae	-	+	-	V	+	S
Alliococcus otitis	+	+	+	V	+a	S
Gemella						
G. hemolysans	-	V	+	-	-	S
G. morbillorum	-	+	+b	-	-	S
Helcococcus kunzii	-	-	+	+	V	S
Lactococcus spp.	-	+	+	+	-	S
Leuconostoc spp.	-	-	-	-	V	R
Pediococcus spp.	-	+	-	+	V	R
Tetragenacoccus spp.	-	+	-	NR	NR	S
Vagacoccus spp.	-	+	+	+	+	S

V = Variable; NR = No Result; S = Susceptible; R = resistant
a = May require 2 to 7 days; b = Weakly positive with large inoculum

- *Ensure that the test organism is β-hemolytic, catalase negative, and a gram-positive coccus before performing the PYR test*

- *Streptococcus porcinus and S. iniae are animal associated, β-hemolytic species that possess the necessary enzyme to produce a positive reaction*

- *Enterococci and group A streptococci are both PYR-positive, but differences in colony size and morphology should allow for differentiation*

- *Ensure that an adequate inoculum is used or false negatives may occur*

Quality Control

Organism	**Expected Results**	
Streptococcus pyogenes ATCC 19615	+ve	Red color change
Streptococcus agalactiae ATCC 27956	-ve	No color change

Storage and Shelf Life

PYR Disks should be stored at 2°C to 8°C, and protected from light. Under these conditions the disks have a shelf life of 52 weeks from the date of manufacture.

Ordering Information

Cat# DP95-25 PYR Disks (25/vial)
DP95-50 PYR Disks (50/vial)
DP95K PYR Kit (25 Disks & 3-mL Reagent)

References

1. Godsey J, Schulman R, Enriquez I. The hydrolysis of L-pyrrolidonyl-β-naphthylamide as an aid in the rapid identification of *Streptococcus pyogenes*, *S. avium*, and group D enterococci. Abstr Annu Meet ASM 1981; C84:276.
2. Facklam RR, Thacker LG, Fox B, Eriquez L. Presumptive identification of streptococci with a new test system. J Clin Micro 1982; 15:987-90.
3. Wasilauskas BL, Hampton KD. Evaluation of the Strep-A-Fluor identification method for strep A streptococci. J Clin Micro 1984; 20:1205-1206.
4. Yajko DM, Lawrence J, Nassos P, Young J, Hadley KW. Clinical trial comparing bacitracin with Strep-A-Chek for accuracy and turnaround time in the presumptive identification of *Streptococcus pyogenes*. J Clin Micro 1986; 24:431-4.
5. Gordon LP, Damm MAS, Anderson JD. Rapid presumptive identification of streptococci directly from blood cultures by serologic tests and the L-pyrrolidonyl-β-naphthylamide reaction. J Clin Micro 1987; 25:238-41.
6. Murray PR, Baron EJ, Pfaller MA, Tenover FC, Yolken RH, Eds. Manual of clinical microbiology. 7th ed. Washington, DC: ASM Press, 1999.
7. MacFaddin, JF. Biochemical Tests for the Identification of Medical Bacteria, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2000.

Original: January 2002
Revised / Reviewed: October 2014