

STREPSwift

a rapid colorimetric test aid for discriminatory recognition of Streptococci and related genera from primary culture
 Cat. Number: BI-601 (50 Determinations). Instructions for Use

INTENDED USE

Novamed STREPSwift is a rapid means intended for the presumptive identification of streptococci and related genera (gram-positive, catalase-negative cocci) from primary culture. The test relies on recognition of activity of pyroglutamate aminopeptidase (PYR) and leucine aminopeptidase (LAP), and β-glucosidase (esculinase; ESC).

PRINCIPLE

Novamed STREPSwift qualitatively assesses key biochemical reactions for the discriminatory identification of gram-positive, catalase-negative cocci [Mac Faddin, 2000; Murray and American Society for Microbiology., 1999]; and references therein].

PYR-test is a rapid colorimetric method for the detection of hydrolytic activity of pyroglutamate aminopeptidase. L-pyroglutamyl-β-naphthylamide, impregnated into the test card, serves as the substrate for the detection of pyroglutamate aminopeptidase releasing β-naphthylamide when hydrolyzed. The latter forms a bright pink to cherry red pigment upon addition of dimethylaminocinnamaldehyde reagent (DMACA).

LAP-test L-leucine-β-naphthylamide substrate is hydrolyzed by leucine aminopeptidase. Similarly to the aforementioned PYR reaction, the released β-naphthylamide combines with DMACA reagent to form a bright pink to cherry red pigment.

ESC-test Esculin analog is hydrolyzed by organisms capable of producing β-glucosidase releasing a dye entity to bring about blue coloration of the test surface.

KIT COMPONENTS

STREPSwift test cards (50)

Rehydrating solution (contains preservative; please refer to MSDS).

Color developer solution (contains harmful material; please refer to MSDS)

INSTRUCTIONS FOR USE

STORAGE AND STABILITY

Store tests and solutions at 2-8⁰ C. Keep away from heat and light. **Allow product to warm up to room temperature prior to conducting tests.** Maintain unused cards from the open kit at 2-8⁰ C in the foil pouch provided. Protect cards from moisture by sealing the pouch. Do not use STREPSwift if coloration of PYR and LAP test circles is present. Do not use STREPSwift past the expiration date. Do not use STREPSwift if stored at temperature other than indicated.

PRECAUTIONS

STREPSwift is intended for In-Vitro Diagnostic use only. Test samples should be handled only by individuals with applicable training. **Avoid skin contact with color developer solution. Color developer is toxic and harmful if swallowed or inhaled, or on direct contact with skin.** Refer to MSDS for detailed information on hazardous instances.

SPECIMEN COLLECTION

Required specimen: Primary or secondary cultures grown for 18-48 hours on blood agar. Colonies tested must be Gram-positive, catalase negative and morphologically consistent with streptococcal appearance.

TEST PROCEDURE

Rehydrate each test circle with one (1) drop (25-30µl) of rehydrating solution (supplied). Do not oversaturate the test area!

Pick several well-defined colonies with an applicator stick or a sterile plastic loop. Inoculate each test circle rubbing the specimen gently onto the test surface. Use a different inoculator for each circle to prevent substrate carryover from one test circle to another.

Following 10 minutes of incubation add four (4) drops (100-120µl) of color developer solution to **PYR** and **LAP** circles. A positive test produces bright pink to cherry red color. Color alteration of PYR and LAP should not be evaluated more than one minute after addition of color developer solution. Any color change subsequently developing in the test area should be disregarded. Yellow, orange or any other color changes should be considered negative.

Color changes in **ESC** circle may become evident as soon as 2-5 minutes following test inoculation. However, if no change is observed, incubate the test up to 10 minutes. A positive ESC test results in development of turquoise to deep blue color. Do not interpret test results after 10 minutes of incubation.

INTERPRETATION OF RESULTS

Test	Positive result	Negative result
PYR	Cherry red or bright pink	No color, yellow, orange, salmon
LAP	Cherry red or bright pink	No color, yellow, orange
ESC	Turquoise to deep blue	No color

EXPECTED VALUES

Organism	Results		
	PYR	LAP	ESC
<i>Aerococcus viridans</i>	+	-	V
<i>Enterococcus spp.</i>	+	+	+
<i>Streptococcus bovis</i> , <i>Streptococcus equinus</i>	-	+	+*

+, most strains positive; -, most strains negative; V, variable

**S. infantarius* subsp. *infantarius* are reported as mostly ESC-negative; *S. infantarius* subsp. *coli* ESC are reportedly variable (Beck et al., 2008; Schlegel et al., 2000; Schlegel et al., 2004).

TEST LIMITATIONS

The PYR and LAP tests are to be evaluated up to 1 minute from the time the color developer solution is added. Any color changes taking place after this designated time should be disregarded.

The test should only be applied to bacterial culture grown on non-selective media (i.e. Blood Agar) for 18-48 hours.

STREPSwift results are accurate when 3 or more well-defined colonies are inoculated at each test circle. For small, ill-defined colonies at least a loop-full of culture should be applied to the test. False negative reactions may occur with suboptimal inoculum size.

STREPSwift is not to be used as a standalone diagnostic utility, with its results valuable when a series of biochemical tests (e.g. Gram-staining, catalase test, etc.) are performed concomitantly.

IMPORTANT NOTES

Some enterococcal strains, particularly *E. faecalis*, have a propensity to yield weak positive results when primary cultures are tested for catalase activity due to expression of pseudocatalase. This phenomenon is less frequent with subcultures (Koneman, 1992).

Results with select organisms, routinely assessed for QC purposes.

Bacteria Strain (ATCC no)	PYR	LAP	ESC
<i>Enterococcus faecalis</i> (51299)	+	+	+
<i>Enterococcus faecalis</i> (29212)	+	+	+
<i>Enterococcus durans</i> (6056)	+	+	+
<i>Enterococcus faecium</i> (35667)	+	+	+
<i>Enterococcus avium</i> (14025)	+	+	+
<i>Enterococcus casseliflavus</i> (700327)	+	+	+
<i>Streptococcus pneumoniae</i> (49619)	-	+	V
<i>Streptococcus gallolyticus</i> (<i>S. bovis</i>) (9809)	-	+	+
<i>Streptococcus pyogenes</i> (19615)	+	+	-
<i>Streptococcus equi</i> (9528)	-	+	-
<i>Streptococcus agalactiae</i> (27956)	-	+	-
<i>Streptococcus mutans</i> (35668)	-	+	+
<i>Streptococcus mitis</i> (6249)	-	+	-
<i>Aerococcus viridans</i> (700406)	+	-	+
<i>Lactobacillus acidophilus</i> (314)	-	+	+

Note: *Enterococcus casseliflavus* samples display bright yellow color when inoculated on STREPSwift. ESC test positivity may appear as a bright blue halo around the inoculation site.

Users are urged to evaluate STREPSwift batch performance using any of the above ATCC strains.

BIBLIOGRAPHY

Beck, M., Frodl, R., and Funke, G. (2008). Comprehensive study of strains previously designated *Streptococcus bovis* consecutively isolated from human blood cultures and emended description of *Streptococcus gallolyticus* and *Streptococcus infantarius* subsp. *coli*. J Clin Microbiol 46, 2966-2972.

Koneman, E.W. (1992). Color atlas and textbook of diagnostic microbiology, 4th edn (Philadelphia, J.B. Lippincott).

Mac Faddin, J.F. (2000). Biochemical tests for identification of medical bacteria, 3rd edn (Philadelphia, Lippincott Williams & Wilkins).

Murray, P.R., and American Society for Microbiology. (1999). Manual of clinical microbiology, 7th edn (Washington, D.C., ASM Press).

Schlegel, L., Grimont, F., Collins, M.D., Regnault, B., Grimont, P.A., and Bouvet, A. (2000). *Streptococcus infantarius* sp. nov., *Streptococcus infantarius* subsp. *infantarius* subsp. nov. and *Streptococcus infantarius* subsp. *coli* subsp. nov., isolated from humans and food. Int J Syst Evol Microbiol 50 Pt 4, 1425-1434.

Schlegel, L., Grimont, F., Grimont, P.A., and Bouvet, A. (2004). New group D streptococcal species. Indian J Med Res 119 Suppl, 252-256.