

## 4 MU DISCS

### PRINCIPLE / DISCUSSION:

When a substrate is bound to 4-MU, the degradation by the enzyme releases a blue fluorescent end product (4-methylumbelliferone). This blue fluorescence can be observed under a hand-held long wave length UV lamp (i.e. Wood's Lamp). The 4 MU tests are generally used as a rapid means for differentiation of selected groups of similar organisms as illustrated on the back of this insert. Each disc contains approximately 10 ug of the respective active substrate.

### STORAGE:

Discs are light sensitive. Store in dark and tightly covered in the freezer.

### MATERIALS REQUIRED:

Discs are provided 50 per container. Usage requires a pure 24-48 hour culture of the organism on a non-fluorescing media such as blood agar or TSA. A loop or stick for harvesting the organisms, a slide, distilled water, pH 5.0 to 7.2 and a Wood's lamp (K1698 or equivalent) are needed but not provided.

### PROCEDURE:

- 1) Place a disc onto a slide and moisten slightly.
- (2) Smear a paste of the test organism onto the moistened paper.
- (3) Incubate in the dark @35-37C for 5-15 minutes. Observe fluorescence under a long wave UV light (360nm or greater).

### INTERPRETATION:

The appearance of an intense blue/white fluorescence where the organism was smeared is a positive result. Negative tests have no fluorescence or may fluoresce a different color. Look only for the blue/white fluorescence.

### QUALITY CONTROL:

Each lot of discs should be checked with organisms of known reactivity. The chart shows some recommendations. More information on reactivity of organisms is available.

### LIMITATIONS:

MacConkey, EMB, or similar media contain substances which can fluoresce and make reading the test difficult. Use only a non-fluorescing type medium.

### REFERENCES:

- 1) Journal of Clinical Microbiology, Sept., 1986, p.368-371, "Comparison of  $\beta$ -Glucuronidase-Based Substrate Systems for Identification of *Escherichia coli*.", Stephen C. Edberg, and Christine M. Konnick.
- 2) Manual of Clinical Microbiology, Fifth Edition, Chapter 28, "Staphylococcus".
- 3) Bailey and Scott's Diagnostic Microbiology, Seventh Edition, Chapter 27 "Enterobacteriaceae".
- 4) Journal of Clinical Microbiology, June 1992, p.1402-1406, "Fluorogenic Substrates for Differentiation of Gram-Negative Non fermentative and Oxidase-Positive Fermentative Bacteria", Peter Kampfer, Isolde Kulies, and Wolfgang Dott.
- 5) Standard Methods for the Examination of Water and Wastewater 17th Edition, APHA . AWWA . WPCF. Denver, CO.

CAT#	NAME	4 mu SUBSTRATE	ENZYME DETECTED	QC POS	QC NEG
K9275	MBGL	$\beta$ D glucopyranoside	$\beta$ glucosidase	Strep anginosus ATCC 33397	Strep constellatus ATCC 27823
K9280	MUG	$\beta$ D glucuronide hydrate	$\beta$ glucuronidase (MUG)	Escherichia coli ATCC 25922	Enterobacter aerogenes ATCC 13048
K9230	MBFU	$\beta$ D fucopyranoside	$\beta$ fucosidase	Strep intermedius ATCC 27335	Strep constellatus ATCC 27823
K9270	MAGL	$\alpha$ D glucopyranoside	$\alpha$ glucosidase	Strep constellatus ATCC 27823	Strep anginosus ATCC 33397
K9268	MNAGA	N-acetyl- $\beta$ D galactosaminide	N-acetyl- $\beta$ D galactosaminidase	Enterobacter aerogenes ATCC 13048	Klebsiella pneumoniae ATCC 33495
K9292	MBXYL	$\beta$ D Xylopyranoside	$\beta$ xylosidase	Klebsiella pneumoniae ATCC 33495	Citrobacter koseri ATCC 27028

4MU-EDIT

### STREP MILLERI SPECIATION

STRAIN	K9230	K9275	K9270
<i>S. intermedius</i>	+	V	+
<i>S. anginosus</i>	-	+	v
<i>S. constellatus</i>	-	-	+

### ENTERIC QUICK SCREEN (PYR+,MUG -)

SPECIES	K9268	K9292
KLEBSIELLA	-	+
CITROBACTER	-	-
ENTEROBACTER	+	+
RAHNELLA	-	+
SERRATIA	+	V

### MUG K9280

E COLI	+
SHIGELLA SONNEI	+
SHIGELLA SP	+
SALMONELLA SP	+
ALL OTHER ENTERICS	-



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