

## **MUG WEE-TAB K1280**

### **PRINCIPLE / DISCUSSION:**

Beta glucuronidase has long been recognized as a quick and easy method to screen enterics. When this 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 MUG test has been used many years in the clinical and industrial labs as a screen for *Escherichia coli*. While few other enterics possess this enzyme, over 92% of *Escherichia coli* sp. do. When a gram-negative, oxidase negative rod is lactose positive, MUG positive, Indol positive, and ONPG positive, the organism is likely to be *Escherichia coli*. (1) *Shigella* species may also be MUG positive, but these organisms are usually indole negative. In recent years, this test has also been proven useful in the identification of other organisms such as *Staphylococcus* and anaerobes (2).

### **MATERIAL SAFETY DATA:**

KEY MUG Wee-tabs contain 4-methylumbelliferyl  $\beta$ -D-glucuronidase in an inert base. The unused tablets are non-hazardous. Uninoculated waste may be discarded in normal trash. Inoculated product should be discarded according to normal methods for biohazardous waste.

### **STORAGE:**

Mug WEE-TABS are light sensitive. Store in dark and tightly covered at 2-8 C.

### **MATERIALS REQUIRED:**

K1280 - MUG Wee-tabs are sold 28 per container, ready to use in tubes. 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, and distilled or purified water are needed but not provided.

### **PROCEDURE:**

- 1) Add 5 drops of water to the tablet in the tube.
- (2) Inoculate heavily with several colonies of the test organism to approximately a 3 Mcfarland.
- (3) Incubate in the dark at 35-37C for 2 hours. Observe fluorescence under a long wave UV (360nm or greater).

### **INTERPRETATION:**

The appearance of an intense blue/white fluorescence in the water 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 KEY MUG Wee-tabs should be checked with organisms of known reactivity. We recommend *E. coli* ATCC 25922 for positive and *Enterobacter aerogenes* ATCC 13048 as negative.

### **LIMITATIONS:**

MacConkey, EMB, or similiar media contain substances which can fluoresce and make reading the test difficult. We recommend using K9101 MOT discs instead when coming from these media or when using a primary culture.

### **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. Kontnick.
- 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 . WP-CF. Denver, CO.



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