IFU

Instructions for Use

MUG DISK

Cat. no. Z17	MUG Disks	25 disks/jar

INTENDED USE

Hardy Diagnostics MUG Disks are recommended for the identification of glucuronidase activity in *E. coli* by fluorescence, under a long-wave (365nm) UV light source.

SUMMARY

Hardy Diagnostics MUG Disks are used to aid in the detection of *Escherichia coli* from water and food samples by fluorogenic means. The enzyme ß-glucuronidase hydrolyzes MUG (4-methylumbelliferyl-ß-D-glucuronide) to 4-methylumbelliferone, which exhibits a bluish fluorescence under a 365nm, long-wave, UV light source. The association of ß-glucuronidase in *E. coli* has been described at 97%.[(1)] All other *Escherichia* species are phenotypically ß-glucuronidase negative, including *E. coli* 0157:H7.

REAGENT FORMULA

MUG Disks are prepared by impregnating MUG (4-methylumbelliferyl-ß-D-glucuronide) onto a high quality filter paper disk.

STORAGE AND SHELF LIFE

Storage: Upon receipt store frozen at less than -10ºC. away from direct light. Disks should not be used if there are any signs of deterioration or discoloration.

The expiration date on the product label applies to the product in its intact packaging when stored as directed. The product may be used and tested up to the expiration date on the product label and incubated for the recommended incubation times as stated below.

Refer to the document "Storage" for more information.

PRECAUTIONS

This product may contain components of animal origin. Certified knowledge of the origin and/or sanitary state of the animals does not guarantee the absence of transmissible pathogenic agents. Therefore, it is recommended that these products be treated as potentially infectious, and handle observing the usual universal blood precautions. Do not ingest, inhale, or allow to come into contact with skin.

This product is for laboratory use only. It is to be used only by adequately trained and qualified laboratory personnel. Observe approved biohazard precautions and aseptic techniques. All laboratory specimens should be considered infectious and handled according to "standard precautions." Refer to the document "Guidelines for Isolation Precautions" from the Centers for Disease Control and Prevention.

For additional information regarding specific precautions for the prevention of the transmission of all infectious agents from laboratory instruments and materials, and for recommendations for the management of exposure to infectious disease, refer to CLSI document M29: *Protection of Laboratory Workers from Occupationally Acquired Infections.*

Sterilize all biohazard waste before disposal.

Refer to the document "Precautions When Using Media" for more information.

PROCEDURE

1. Place the MUG Disk in an empty petri dish.

2. Lightly moisten disk with distilled or deionized water. Do no saturate.

3. Using a sterile loop, pick 2 to 3 well isolated, 18-24 hour old colonies and rub into a small area of the MUG Disk so that there is a visible paste.

4. Incubate the disk for 30 minutes at 35ºC.

5. After incubation, examine the disk under a long-wave UV light (365nm) for fluorescence.

INTERPRETATION OF RESULTS

Use a 365nm wavelength handheld UV Lamp (Cat. no. UVL56 or LSS3) to detect inoculum fluorescence. These handheld lamps require that the room lights be turned off, since ambient light will interfere with fluorescence detection. Alternatively, a dark viewing box (Cat. no. CM10A) with its companion UV lamp (Cat. no. EA160) may be used so that the room lights will not need to be turned off.

CAUTION: Not all UV wavelengths are capable of producing sufficient fluorescence effects. It is important to use a UV light with a wavelength at or near 365nm, one with higher power (in watts, not lumens), and one that is high efficiency. Use of UV lights not meeting these criteria will fail to produce sufficient fluorescence. Most inexpensive battery operated LED UV lights produce light at multiple wavelengths, use less watts, and/or low power, and are thus **not acceptable** and will produce erroneous results. Cat. no. LSS3 is an exception and has been verified to work well. Please do not use cheaper versions.

Tips for using fluorescence

1. Use a 365nm handheld UV lamp (Cat. no. UVL56) or (Cat. no. LSS3) to detect fluorescence on the disk. See 'CAUTION' above regarding inexpensive handheld UV lights. Alternatively, a dark viewing box with its compatible UV lamp may be used as described above. Viewing must be done in the dark.
2. Hold the lamp directly over the disks, approximately 3 to 4 inches (7 to 10cm) away.
3. Fluorescence will fade over time.

MUG positive cultures will fluoresce bright blue, indicating the presence of *E. coli* (except for *E. coli* O157:H7).

LIMITATIONS

It is recommended that biochemical, immunological, molecular, or mass spectrometry testing be performed on colonies from pure culture for complete identification of bacteria and/or fungi.

E. coli 0157:H7 will be MUG negative.

Fluorescence must be read in a darkened environment with a 365nm wavelength UV lamp of adequate power (see “Tips for Using Fluorescence” above).

Refer to the document "Limitations of Procedures and Warranty" for more information.

MATERIALS REQUIRED BUT NOT PROVIDED

Standard microbiological supplies and equipment such as loops, other culture media, swabs, UV lamps, applicator sticks, incinerators, handheld UV lamp (Cat. no. UVL56 or LSS3) or dark viewing box (Cat. no. CM10A) with compatible UV lamp (Cat. no. EA160), and incubators, etc., as well as serological and biochemical reagents, are not provided.

QUALITY CONTROL

Hardy Diagnostics tests each lot of commercially manufactured media using appropriate quality control microorganisms and quality specifications as outlined on the Certificate of Analysis (CofA) and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media*. The following microorganisms are routinely used for testing at Hardy Diagnostics:

Test Organisms	Reaction
Escherichia coli ATCC® 25922	Positive; Fluorescence under long-wave UV light
Proteus mirabilis ATCC® 12453	Negative; No fluorescence under long-wave UV light

USER QUALITY CONTROL

End users of commercially prepared culture media should perform QC testing in accordance with applicable government regulatory agencies, and in compliance with accreditation requirements. Hardy Diagnostics recommends end users check for signs of contamination and deterioration and, if dictated by laboratory quality control procedures or regulation, perform quality control testing to demonstrate growth or a positive reaction and to demonstrate inhibition or a negative reaction, if applicable. Hardy Diagnostics quality control testing is documented on the certificate of analysis (CofA) available from Hardy Diagnostics Certificate of Analysis website. Also refer to the document "Finished Product Quality Control Procedures," and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media* for more information on the appropriate QC procedures. See the references below.

PHYSICAL APPEARANCE

MUG Disks should appear white in color.

REFERENCES

1. Kilian, M., & Bulow, P. 1976. *Acta Pathol. Microbiol. Scand*, Sect. B. 84, 245-251.

2. Koneman, E.W., et al. *Color Atlas and Textbook of Diagnostic Microbiology*, J.B. Lippincott Company, Philadelphia, PA.

3. American Public Health Association. *Standard Methods for the Examination of Water and Wastewater*, APHA, Washington, D.C.

4. Association of Official Analytical Chemists. *Official Methods of Analysis*℠, AOAC, Washington, D.C.

5. American Public Health Association. *Standard Methods for the Examination of Dairy Products*, APHA, Washington, D.C.

6. APHA Technical Committee on Microbiological Methods for Foods. *Compendium of Methods for the Microbiological Examination of Foods*, APHA, Washington, D.C.

7. U.S. Food and Drug Administration. *Bacteriological Analytical Manual.* AOAC, Arlington, VA. http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm2006949.htm.

ATCC is a registered trademark of the American Type Culture Collection.

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1430 West McCoy Lane, Santa Maria, CA 93455, USA
Phone: (805) 346-2766 ext. 5658
Fax: (805) 346-2760
Website: HardyDiagnostics.com
Email: TechnicalServices@HardyDiagnostics.com
Ordering Information

Distribution Centers:
California · Washington · Utah · Arizona · Texas · Ohio · New York · Florida · North Carolina

The Hardy Diagnostics manufacturing facility and quality management system is certified to ISO 13485.

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