

# SAS™ *E. coli* 0157:H7 & *E. coli* 0157 Test

A rapid visual assay for  
the qualitative detection of  
*E. coli* 0157 and 0157:H7 in food samples

Store at 15°C to 30°C

For Technical Assistance

1-800-272-2710

or

210-699-8800



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San Antonio, Texas 78240

## INTENDED USE

SAS™ *E. coli* 0157 and 0157:H7 Test is a qualitative rapid test for the detection of *E. coli* 0157 and 0157:H7 in enriched media. This test is for professional use only.

## INTRODUCTION

Consumption of food contaminated with pathogenic enteric bacteria and viruses is the major source of food borne infections (1, 2). Verocytotoxin-producing *E. coli* (VTEC) are known pathogens to man (2). Of the numerous VTEC serotype identified, *E. coli* 0157:H7 is dominant in causing sickness in humans (2, 3). This pathogen is characterized serologically by the presence of the somatic O157 and the flagellar H7 antigens. For example the enterohemorrhagic serotype (O157:H7) has been reported to cause severe bloody diarrhea (hemorrhagic colitis) and hemorrhagic uremic syndrome, which may lead to kidney failure. However, nonmotile variants (i.e., *E. coli* 0157) have been associated with human infections (1, 2).

Ingestion of as few as 10-100 bacteria of the toxin producing *E. coli* is sufficient to cause the disease (3, 4). The Centers for Disease Control and Prevention estimate that 20,000 cases of *E. coli* 0157:H7 and O157 infections may occur each year resulting in hundreds of deaths. Therefore, early detection of this organism in ground meat and other foods is essential to reduce the number of infection outbreaks as well as to provide a higher quality assurance program for food safety (5, 6).

## PRINCIPLE OF THE TEST

SAS™ *E. coli*-Test is designed to detect *E. coli* 0157:H7 and 0157 antigens in food samples. SAS™ *E. coli*-Test is a rapid qualitative test that is based on the use of *E. coli* 0157:H7-specific antibodies. The reaction between the enriched positive sample and the colored particle-conjugated antibody will form a complex that migrates along the membrane. An immobilized capture antibody will form a colored line at the S (specimen) area upon reacting with the colored complex. An internal control line (C zone) is built in to assure that the test has been carried out correctly.

## TEST PROCEDURE

### Materials Provided:

Test device

### Materials Not Provided:

1. Sterile tubes or stomacher bags.
2. Enrichment broth, we recommend Cat. # 0340-17-0, or Accumedica, Baltimore, MD, Cat. # 7506).

### Protocol

Allow the test device, specimen and/or controls to reach room temperature (15° to 30°C) prior to testing.

### Sample Preparation/Test Running:

1. A ratio of 1:10 sample to enrichment media (mEC) is recommended. (For example, 1 g to 9 ml, 10 ml to 90 ml etc.)
2. Incubate the sample/broth mixture at 37°C for 16-24 hours.
3. Add 150 ul of the sample/broth mixture in the sample well.
4. Read results 10-15 minutes and no longer than 15 minutes. Some positive results may be observed in as short as 30 seconds depending on the concentration of the antigen in the sample tested.

## QUALITY CONTROL

Each test includes a built in procedural control. Correct procedural technique and test device performance is confirmed when a colored line appears in the C (control) area of the membrane. It is recommended that when a new shipment of product is received, negative and positive controls should be tested and the appropriate results obtained.

## INTERPRETATION OF RESULTS

### Negative Results

The test is negative if only one colored line appears in the C (control) area.

### Positive Results

The test is positive if two colored lines appear. One colored line will appear in the S (specimen) area and one in the C (control) area. A colored line of any intensity in the S (specimen) area should be considered positive. Colored lines may be lighter or darker than each other.

## Invalid Results

The test is invalid if no colored line appears in the C (control) area even if a colored line appears in the S (specimen) area. If no colored line appears in the C (control) window, add an additional 50 ul of sample/EM broth mixture and wait an extra 4 minutes. If a colored line still does not appear in the C (control) window, the test is invalid and should be repeated using another device.

Colored lines that appear after 15 minutes are not diagnostic and should be ignored.



## STORAGE

The test kit is to be stored at room temperature (15° to 30°C) for the duration of the shelf life. The test device must remain in the sealed pouch until ready for use.

## REFERENCES

1. Garry, L. (1995). *Escherichia*, *Salmonella*, *Shigella*, and *Yersinia*. In Manual of Clinical Microbiology. 6th Edition, Murray, P. R., et al. Editors. American Society for Microbiology Press, Washington, DC.
2. Heuvelink, A. E., et al. (1997). Isolation and characterization of verocytotoxin-producing *Escherichia coli* 0157 strains from Dutch cattle and sheep. J. Clin. Microbiol. 36:878-882.
3. Westerman, R., et al. (1997). Production and characterization of monoclonal antibodies specific for the lipopolysaccharide of *Escherichia coli* O157. J. Clin. Microbiol. 35:679-684.
4. Al-Sheddy, I. A., et al. (1995). Microbiology of fresh and restructured lamb meat: A review. Clin. Rev. Microbiol. 21:31-52.
5. Park, C., Vandel, N, and Hixon, D. (1996). Rapid immunoassay for detection of *Escherichia coli* 0157 directly from stool specimens. J. Clin. Microbiol. 34:988-990.
6. Bennett, A., MacPhee, S., and Betts, R. (1995). Evaluation of methods for the isolation and detection of *Escherichia coli* 0157 in minced beef. Lett. Appl. Microbiol. 20:375-379.

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