E. coli Screen

INTENDED USE
Remel E. coli Screen is a medium recommended for use in qualitative procedures for the presumptive identification of Escherichia coli.

SUMMARY AND EXPLANATION
*E. coli* is the most commonly recovered bacterial species in the clinical laboratory with disease processes ranging from urinary tract infections to gram-negative sepsis. In 1981, Godsey reported on the usefulness of enzyme activity profiles for the rapid identification of *Enterobacteriaceae*. He found *E. coli* and *Shigella sonnei* could be distinguished from other species by the detection of β-glucuronidase. Trepeta and Edberg utilized the detection of β-glucuronidase in conjunction with oxidase, indole, and lactose fermentation as a method for the rapid, cost-effective identification of *E. coli*.

PRINCIPLE
β-nitrophenyl β-D-glucopyranosiduronic acid (PGUA), a colorless compound, is hydrolyzed by β-glucuronidase yielding nitrophenyl, a yellow compound. In the indole test, the enzyme tryptophanase attacks the tryptophan molecule on its side chain leaving the aromatic ring in the form of indole. The reaction occurs by a condensation process formed by an acid splitting of the protein. p-dimethylaminobenzaldehyde combines with indole to form a red colored complex.

REAGENTS (CLASSICAL FORMULA)*
E. coli Screen Tubes:
- Columbia Agar................................................ 18.0 g
- Tryptophane................................................... 2.0 g
- β-nitrophenyl β-D-glucopyranosiduronic acid.. 0.33 g
- Demineralized Water .................................. 1000.0 ml

Kovacs Indole Reagent:
- Dimethylaminobenzaldehyde.......................... 50.0 g
- Hydrochloric Acid........................................... 250.0 ml
- Amyl Alcohol ................................................. 750.0 ml

*Adjusted as required to meet performance standards.

PRECAUTIONS
POISON! May be harmful or fatal if swallowed. CORROSIVE, may cause burns or irritation to skin, eyes, or respiratory tract. Avoid breathing vapor and eye/skin contact. Refer to Material Safety Data Sheet for additional information.

This product is For *In Vitro* Diagnostic Use and should be used by properly trained individuals. Precautions should be taken against the dangers of microbiological hazards by properly sterilizing specimens, containers, and media after use. Directions should be read and followed carefully.

STORAGE
This product is ready for use and no further preparation is necessary. Store product in its original container at 2-8°C in the dark until used. Allow product to equilibrate to room temperature before use. Do not incubate prior to use.

PRODUCT DETERIORATION
This product should not be used if (1) there is evidence of contamination or dehydration, (2) the expiration date has passed, or (3) there are other signs of deterioration.

SPECIMEN COLLECTION, STORAGE, TRANSPORT
Specimens should be collected and handled following recommended guidelines.

MATERIALS SUPPLIED
(1) E. coli Screen tubes and (2) Kovacs Indole reagent.

MATERIALS REQUIRED BUT NOT SUPPLIED

PROCEDURE
E. coli Screen is designed for testing isolates that demonstrate typical morphology and lactose fermentation on MacConkey or EMB Agar. Test isolates should be 18-24 hours old and in pure culture or have well isolated colonies.

1. Obtain a visible, heavy inoculum using a wooden applicator stick or sterile loop.
2. Stab the E. coli Screen tube near one side next to the glass.
3. Incubate the tube aerobically at 35-37°C for one to four hours.
4. Observe for a color change to bright yellow indicating a positive PGUA reaction.
5. Add two (2) drops of Kovacs Indole Reagent to the tube after interpreting the PGUA reaction.
6. Observe for a color change to red indicating a positive indole reaction.

INTERPRETATION
PGUA Test:
- Positive Test - Bright yellow color formation
- Negative Test - No color change

Indole Test:
- Positive Test - Red color development
- Negative Test - No color change
QUALITY CONTROL
All lot numbers of E. coli Screen have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

RESULTS

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>INCUBATION</th>
<th>PGUA</th>
<th>IND</th>
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<tbody>
<tr>
<td>Escherichia coli</td>
<td>Aerobic, up to</td>
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<tr>
<td>ATCC® 25922</td>
<td>4 h @ 35°C</td>
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</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>Aerobic, up to</td>
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<td>-</td>
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<tr>
<td>ATCC® 27736</td>
<td>4 h @ 35°C</td>
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LIMITATIONS
1. Approximately 97% of E. coli are β-glucuronidase positive.
2. Most of the Enterobacteriaceae are β-glucuronidase negative with the exception of some Shigella spp. Shigella sonnei is β-glucuronidase positive; however, it is a lactose nonfermenter and indole negative. Serological testing may be required to differentiate certain closely related strains of E. coli and Shigella species.6
3. Most strains of E. coli O157:H7 are β-glucuronidase negative.7
4. The performance of this medium is dependent on a proper inoculum.
5. This test is only part of the overall scheme for identification. Further biochemical and serological testing may be necessary for definitive identification.

BIBLIOGRAPHY

PACKAGING
REF R211347, E. coli Screen................... 50 Tests/Kit

Symbol Legend

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<td>IVD</td>
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