

COLOREX™ Orientation

PRODUCT:

Plated media:

COLOREX™ Orientation Agar P7255

PURPOSE:

COLOREX™ Orientation agar is a selective medium for the isolation and presumptive identification of urinary tract pathogens in clinical specimens. The addition of chromogenic substrates in the medium facilitates the direct detection and differentiation of *Escherichia coli*, *Enterococcus sp.*, *Klebsiella sp.*, *Pseudomonas sp.*, *Proteus sp.*, *Staphylococcus aureus*, and *Staphylococcus saprophyticus*.

PRINCIPLE:

Urinary tract infections (UTI) are common, and it is not surprising that urine specimens make up a large proportion of those samples submitted to the routine diagnostic laboratory¹. UTI's are primarily caused by gram-negative organisms, mostly coliform bacteria, due to the proximity of the the rectal area and the female urethra. *E. coli* and Enterococci are the most frequently isolated pathogens, while *Klebsiella sp.* and *Proteus sp.* are found in urine specimens derived from kidney dysfunction⁴. Gram-positive organisms, such as *S. aureus* and *S. saprophyticus*, have also been described as UTI pathogens, but they are not as commonly encountered.

The COLOREX™ Orientation medium contains specially selected peptones that supply the nutrients for urinary tract pathogens to grow. A chromogenic mixture consisting of artificial substrates (chromogens) is supplemented in the medium to produce colored compounds upon degradation by specific enzymes such as β -galactosidase and β -glucosidase³. Due to metabolic differences in the presence of selected chromogens, colonies of *E. coli*, *Enterococcus sp.*, *Klebsiella sp.*, *Pseudomonas sp.*, *Proteus sp.*, *S. aureus*, and *S. saprophyticus* will appear in different colors to allow the detection and differentiation between isolates.

FORMULA:

Approximate, per liter deionized filtered water.

COLOREX™ Orientation Agar base..... 33.0 g
(Chromopeptones, Chromogenic mix, Agar)
Final pH 7.0 \pm 0.2 at 25°C

PRECAUTIONS:*

For *in vitro* diagnostic use only. Not intended for use in the diagnosis of disease or other conditions. Observe approved biohazard precautions.

Storage: Upon receipt, store at 2-8°C in the dark. Media should not be used if there are signs of contamination, deterioration (shrinking, cracking, or discoloration), or if the expiration date has passed. It is recommended to keep plates in the original sleeve wrapping until prior to use to protect from light and dehydration.

Plates can be kept for one day at ambient temperature prior to use.

Limitations: COLOREX™ Orientation is designed for the presumptive identification of *E. coli*, *Enterococcus sp.*, *Klebsiella sp.*, *Enterobacter sp.*, *Citrobacter sp.*, *Proteus sp.*, *Pseudomonas sp.*, *S. aureus*, and *S. saprophyticus*. The media is non-selective and other UTI pathogens will grow such as *Candida spp.* and *Streptococcus spp.* Further confirmatory tests are recommended for any isolates grown on the medium.

Colonies may not react with chromogens in the medium, and their natural color may show. Biological and serological testing is recommended to further identify and differentiate the isolates.

E. coli colonies that are red to dusty-rose in color, but are pinpoint to small in size require additional confirmatory testing such as spot indole test. Use only dimethylaminocinnamaldehyde (DMACA) indole reagent. The red color of *E. coli* colonies may interfere with the red color of a positive indole test.

Non-clinical and clinical specimens other from urine have not been described for use with this medium.

Candida species may grow and appear as their natural cream colonies; appropriate biological and serological tests should confirm

the identification.

Streptococcus agalactiae may grow and appear small to pinpoint in size, light blue-green to light blue in colony color. Biological and serological testing is required for further identification.

Serratia marcescens may grow on the medium as blue green colonies; appropriate biological and serological tests should confirm the identification.

Minimize exposure of COLOREX™ Orientation to light before and during incubation, as light may destroy the chromogens.

PROCEDURE:*

Specimen Collection: Information about specimen collection is found in standard reference materials. In general, specimens should be protected from extreme heat and cold and should be delivered to the laboratory without delay.

Method of Use: Prior to inoculation, the medium should be brought to room temperature. Inoculate the medium with a dilution of the specimen (by using a calibrated loop or other techniques commonly used for plating urine specimens) to facilitate isolation of individual colonies. Incubate aerobically at 35°-37°C and examine plates at 18-24 hours of incubation with the plates inverted (agar-side up).

Interpretation:

After proper incubation, read plates against a white background. *E.coli* will appear as red to dusty-rose colored colonies, while *Enterococcus sp.* will appear as turquoise colonies, *Klebsiella sp.* as metallic blue colonies, and *S. aureus* as cream to golden, opaque colonies. *Proteus sp.* will appear translucent, with a gold-brown halo around colonies. *S. saprophyticus* colonies appear small, opaque and pale pink in color. *Pseudomonas spp.* appear as translucent colonies. Yeasts such as *C.albicans* can appear in their natural cream colored colonies if not inhibited.

COLOREX™ Orientation plates are used for presumptive identification, confirmatory tests are recommended.

Materials Required but Not Provided: Standard microbiological supplies and equipment such as those products commonly used in a microbiological laboratory are not provided.

QUALITY CONTROL:*

COLOREX™ Orientation Agar:

Microorganisms Used (ATCC #):

Escherichia coli (25922)
Enterococcus faecalis (29212)
Proteus mirabilis (12453)
Klebsiella pneumoniae (13883)
Pseudomonas aeruginosa (27853)
Staphylococcus aureus (25923)
Staphylococcus saprophyticus (49453)
Salmonella choleraesuis (14028)

Expected Results:

Growth; red to dusty rose colored colonies
Growth; turquoise colored colonies
Growth; translucent colonies with gold-brown halo
Growth; metallic blue colored colonies
Growth; translucent colonies
Growth; opaque, cream to golden colonies
Growth; opaque, pale pink colonies
Growth; colorless

Key: see "Interpretation"

User Quality Control: Check for signs of contamination and deterioration. The agar surface should be smooth, moist, and firm. The medium should appear slightly hazy and light straw in color.

BIBLIOGRAPHY:

1. CHROMagar Orientation product insert, NT-EXT-002, version 5.
2. Graham, J. C., and A. Galloway. 2001. ACP Best Practice No 167: the laboratory diagnosis of urinary tract infection. J. Clin. Pathol. 54:911-919.
3. Merlino, J., et al. 1996. Evaluation of CHROMagar Orientation for differentiation and presumptive identification of gram-negative bacilli and Enterococcus species. J. Clin. Microbiol. 34:1788-1793.
4. Murray, P.R., et al., Manual of Clinical Microbiology, 9th ed., American Society for Microbiology, Washington, D. C., 2007.
5. Samra, Z., et al. 1998. Evaluation of use of a new chromogenic agar in detection of urinary tract pathogens. J. Clin. Microbiol. 36:990-994.
6. Scarparo, C., et al. 2002. Comparative evaluation of two commercial chromogenic media for detection and presumptive identification of urinary tract pathogens. Eur. J. Clin. Microbiol. Infect. Dis. 21:283-289.

*For more detailed information, consult appropriate references.

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