HiCrome™ Universal Differential Medium

Recommended for presumptive identification of microorganisms from clinical and non-clinical specimens.

M1600

Composition **

Ingredients	Grams/Litre
Peptone	15.00
Tryptone	4.00
Chromogenic mixture	2.50
Agar	13.50

Final pH (at 25°C) 7.2 ± 0.2

** Formula adjusted, standardized to suit performance parameters

Directions

Suspend 35.00 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

Principle and Interpretation

HiCrome™ Universal Differential Medium is a modification of the medium formulated on basis of the work carried out by Pezzlo (4), Wilkie et al (6), Friedman et al (1), Murray et al (3), Soriano and Ponte (5) and Merlino et al (2). HiCrome™ Universal Differential Medium is recommended for the presumptive identification of microorganisms from clinical and non-clinical specimens where the medium has broader application as a general nutrient agar for isolation of various microorganisms. This medium helps in the identification of some gram-positive bacteria and gram-negative bacteria on the basis of different colony colours exhibited by them. These colours are formed due to the reactions of genus or species specific enzymes with the two chromogenic substrates incorporated in the medium. Enterococcus species, *Escherichia coli* and coliforms produce enzymes which specifically cleave these chromogenic substrates to give characteristically distinctive colony colours. Peptone in the medium serve as sources of amino acids like phenylalanine and tryptophan which aids in indicating tryptophan deaminase activity, thereby facilitating the identification of *Proteus* species, *Morganella* species and *Providencia* species. One of the chromogenic substrate is cleaved by β-glucosidase enzyme possessed by Enterococci resulting in the formation of bluish green colonies. *Escherichia coli* possesses the enzyme β-galactosidase which specifically cleaves the other chromogenic substrate resulting in the formation of purple coloured colonies. *Escherichia coli* can be differentiated and confirmed from other similar coloured colonies, by performing the indole test.

Coliforms cleave both the chromogenic substrates forming blue to purple coloured colonies. Colonies of *Proteus*, *Morganella* and *Providencia* species appear brown due to tryptophan deaminase activity. Peptone and Tryptone provide nitrogenous and carbonaceous compounds, essential growth nutrients and also serve as a source of amino acids.

Type of specimen

Clinical samples , Food samples.

Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (7, 8).

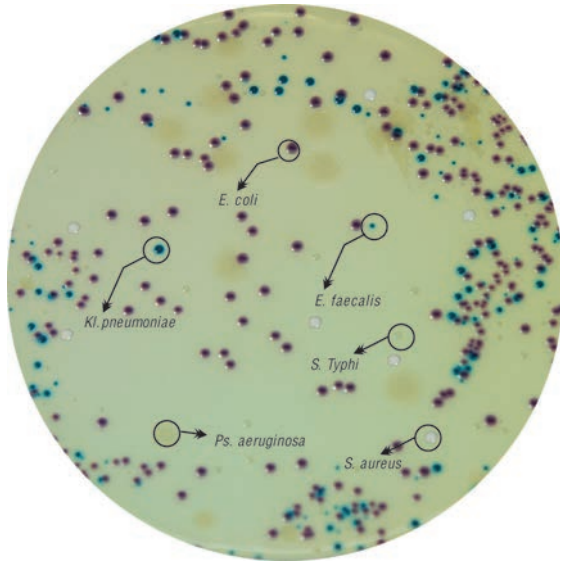
For food samples, follow appropriate techniques for sample collection and processing as per guidelines (9).

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(10)

After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets



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Limitations

1. Some species may show poor growth due to nutritional variations.
2. Slight colour variation may be observed depending upon strains.
3. *Escherichia coli* can be differentiated and confirmed from other similar coloured colonies, by performing the indole test.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the recommended temperature.

Quality Control

Appearance of Powder : Cream to yellow homogeneous free flowing powder

Gelling : Firm, comparable with 1.35% Agar gel.

Colour and Clarity : Light amber coloured, clear to slightly of prepared medium opalescent gel forms in Petri plates

Reaction : Reaction of 3.5% w/v aqueous solution at 25°C. pH : 7.2 ± 0.2.

Cultural Response : Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism (ATCC)	Inoculum (CFU)	Growth	Recovery	Colour of colony
Enterococcus faecalis (29212) (00087*)	50-100	luxuriant	≥70%	blue, small
Escherichia coli (25922) (00013*)	50-100	luxuriant	≥70%	purple
Klebsiella pneumoniae (13883) (00097*)	50-100	luxuriant	≥70%	blue - green, mucoid
Pseudomonas aeruginosa (27853) (00025*)	50-100	luxuriant	≥70%	colourless (greenish pigment may be observed)
Proteus mirabilis (12453)	50-100	luxuriant	≥70%	light brown
Staphylococcus aureus sub-sp aureus (25923) (00034*)	50-100	luxuriant	≥70%	golden yellow
Salmonella Typhi (6539)	50-100	luxuriant	≥70%	colourless
Salmonella Typhimurium (14028) (00031*)	50-100	luxuriant	≥70%	colourless

Key : * = corresponding WDCM Numbers

Storage and Shelf-life

Store between 2-8°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle inorder to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Use before expiry date on the label.

Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (7, 8).

References

1. Friedman M.P. et al (1991), Journal of Clinical Microbiology, 29:2385-2389.
2. Merlino et al (1995) Abstr. Austr. Microbiol. 16(4):17-3.
3. Murray P., Traynor P. Hopson D., (1992), Journal of Clinical Microbiology 30:1600-1601.
4. Pezzlo M (1998), Clinical Microbiology Reviews 1:268-280.
5. Soriano F., Ponte C., (1992), Journal of Clinical Microbiology 30:3033-3034.
6. Wilkie M.E.,Almond M.K.,Marsh F.P.(1992),British Medical Journal 305:1137-1141.
7. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
8. Jorgensen,J.H., Pfaller , M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
9. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
10. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.

Ready Prepared Media

Code	Product Name	Usage	Packing
Category : 90 MM Ready Prepared Petri Plates			
MP1600	HiCrome™ Universal Agar Plate	for presumptive identification of microorganisms from clinical & non clinical specimens	20 plts
Category : HiTouch™ FlexiPlates			
FL042	HiTouch™ HiCrome™ Universal Agar Flexi Plate™	for presumptive identification of microorganisms from clinical & non clinical specimens	50 plts
Category : HiDip™ slides			
HD041	HiDip™ HiCrome™ Universal Agar-PCA	for differential & presumptive identification of microorganisms and total bacteria count.	50 plts