HiCrome Universal Differential Medium

M1600

HiCrome Universal Differential Medium is a differential medium recommended for presumptive identification of microorganisms from clinical and non-clinical specimens.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	15.000
Chromogenic mixture	2.500
Agar	13.500
Casein enzymic hydrolysate	4.000
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 50°C 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 (1), Wilkie et al (2), Friedman et al (3), Murray et al (4), Soriano and Ponte (5) and Merlino et al (6). 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. Peptones 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 ß-glucosidase enzyme possessed by *Enterococci* resulting in the formation of bluish green colonies. *Escherichia coli* possesses the enzyme ß- 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.Peptic digest of animal tissue and casein enzymic hydrolysate provide nitrogenous, carbonaceous compounds, essential growth nutrients and also serve as a source of amino acids.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Gelling
Firm, comparable with 1.35% Agar gel

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

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

pH
7.00-7.40

Cultural Response
M1600: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of Colony
Cultural Response				
Enterococcus faecalis ATCC 29212	50-100	luxuriant	>=70%	blue, small
Escherichia coli ATCC 25922	50-100	luxuriant	>=70%	purple
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	>=70%	blue -green, mucoid
Pseudomonas aeruginosa ATCC 27853	50-100	luxuriant	>=70%	colourless (greenish pigment may be observed)
Proteus mirabilis ATCC 12453	50-100	luxuriant	>=70%	light brown
Staphylococcus aureus ATCC 25923	50-100	luxuriant	>=70%	golden yellow
Salmonella Typhi ATCC 6539	50-100	luxuriant	>=70%	colourless
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	>=70%	colourless

Storage and Shelf Life
Store at 2 - 8°C in tightly capped container. Use before expiry date on the label.

Reference
1.Pezzlo M (1998), Clinical Microbiology Reviews 1:268-280 2.Wilkie M.E.,Almond M.K.,Marsh F.P.(1992),British Medical Journal 305:1137-1141.
3.Friedman M.P. et al (1991), Journal of Clinical Microbiology, 29:2385-2389.
4.Murray P., Traynor P. Hopson D., (1992), Journal of Clinical Microbiology 30:1600-1601.
5.Soriano F., Ponte C., (1992), Journal of Clinical Microbiology 30:3033-3034.
6.Merlino et al (1995) Abstr. Austr. Microbiol. 16(4):17-3.

Revision : 1 / 2011