

SIM HiCynth™ Medium

MCD181

SIM HiCynth™ Medium is recommended for determination of hydrogen sulphide production, indole formation and motility of enteric bacilli.

Composition**

| Ingredients | Gms / Litre |
|-----------------------|-------------|
| HCynth™ Peptone No.1* | 33.000 |
| Iron Substrate | 0.230 |
| Sodium thiosulphate | 0.025 |
| Agar | 3.000 |
| Final pH (at 25°C) | 7.3±0.2 |

**Formula adjusted, standardized to suit performance parameters

*Chemically defined peptone

Directions

Suspend 36.23 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense in tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Allow the tubes to cool in an upright position.

Principle And Interpretation

SIM HiCynth™ Medium is used to differentiate enteric bacilli particularly *Salmonella* and *Shigella* on the basis of sulphide production, indole formation and motility (1,2). Jordan and Victorson (3) reported that *Salmonella* Paratyphi A and Paratyphi B can be distinguished on the basis of H₂S production using lead acetate. Sulkin and Willett (4) used Triple Sugar Iron Agar with 1% agar for motility along with H₂S production and carbohydrate fermentation. Sosa (5) described a medium with low agar for motility and indole determination.

SIM HiCynth™ Medium enables determination of three characteristics by which enteric bacteria can be differentiated. H₂S production is indicated by black precipitate of ferrous sulphide. Motile organisms intensify the H₂S reaction. Motile organisms grow away from line of inoculation showing diffused growth while non-motile organisms grow along the stabline. Motility detection is possible due to the semisolid nature of the medium. Growth radiating out from the central stabline indicates that the test organism is motile.

HiCynth™ Peptone No. 1 provides nitrogenous and carbonaceous compounds, long chain amino acids, vitamins and other essential growth nutrients. Tryptophan, from the medium, is degraded by specific bacteria to produce indole (2). The indole is detected by the addition of Kovacs reagents following the incubation period.

Inoculate fresh culture with a single stab using straight needle through the center of the medium. Following incubation, observe for motility (diffuse growth outward from the stabline or turbidity throughout the medium) and for H₂S production (blackening of the medium). To detect indole production, add three or four drops of Kovacs reagent (2) and observe for development of red color (positive reaction). Determine motility and H₂S production prior to determination of indole production.

Quality Control

Appearance

Cream to beige homogeneous free flowing powder

Gelling

Semisolid, comparable with 0.3% Agar gel.

Colour and Clarity of prepared medium

Medium amber coloured slightly opalescent gel forms in tubes as butts

Reaction

Reaction of 3.6% w/v aqueous solution at 25°C. pH : 7.3±0.2

Cultural Response

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

Cultural Response

| Organism | Inoculum (CFU) | Growth | Motility | Indole production(on) | H ₂ S |
|----------|-------------------|--------|----------|--------------------------|------------------|
|----------|-------------------|--------|----------|--------------------------|------------------|

| Cultural Response | | | | addition of Kovac's Reagent | |
|--|--------|-----------|---|--|---|
| <i>Escherichia coli</i> ATCC 25922 | 50-100 | luxuriant | positive, growth away from stabline causing turbidity | positive reaction, red ring at the interface of the medium | negative reaction |
| <i>Salmonella Typhimurium</i> ATCC 14028 | 50-100 | luxuriant | positive, growth away from stabline causing turbidity | negative reaction | positive reaction, blackening of medium |
| <i>Shigella flexneri</i> ATCC 12022 | 50-100 | luxuriant | negative, growth along the stabline, surrounding medium remains clear | negative reaction | negative reaction |
| <i>Salmonella Paratyphi A</i> ATCC 9150 | 50-100 | luxuriant | positive, growth away from stabline causing turbidity | negative reaction | Negative reaction |
| <i>Salmonella Paratyphi B</i> ATCC 8739 | 50-100 | luxuriant | positive, growth away from stabline causing turbidity | Negative reaction | Positive reaction, blackening of medium |
| <i>Klebsiella pneumoniae</i> ATCC 13883 | 50-100 | luxuriant | negative, growth along the stabline, surrounding medium remains clear | Negative reaction | Negative reaction |

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
2. Ewing W. H., 1986, Edwards and Ewings Identification of Enterobacteriaceae, 4th Ed., Elsevier Science Publishing Co., Inc. New York.
3. Jordan E. O. and Victorson R., 1917, J. Inf. Dis., 21:554.
4. Sulkin S. E. and Willett J. C., 1940, J. Lab. Clin. Med., 25:649.
5. Sosa L., 1943, Rev. Inst. Bacteriol., 11:286.

Revision : 00 / 2016

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