Technical Information

SIM Medium

Product Code: DM 1181

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

Composition**

Ingredients	Gms / Litre
Beef extract	3.000
Peptic digest of animal tissue	30.000
Peptonized iron	0.200
Sodium thiosulphate	0.025
Agar	3.000
Final pH (at 25°C)	7.3±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Jordan and Victorson [3] reported that *Salmonella* Paratyphi A and Paratyphi B can be distinguished on the basis of H_2S production using lead acetate. Sulkin and Willett [4] used Triple Sugar Iron Agar with 1% agar for motility along with H_2S production and carbohydrate fermentation. Sosa [5] described a peptone medium with low agar for motility and indole determination.

SIM Medium enables determination of three characteristics by which enteric bacteria can be differentiated on the basis of sulphide production, indole formation and motility [1, 2]. Peptonized iron and sodium thiosulphate are the indicators of H_2S production. This H_2S reacts with peptonized iron to form black precipitate of ferrous sulphide [4, 5]. Motile organisms intensify the H_2S 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. Tryptophan, from peptic digest of animal tissue, is degraded by specific bacteria to produce indole [2]. The indole is detected by the addition of three or four drops of Kovacs reagent [2] and observes for development of red color (positive reaction).

Methodology

Suspend 36.23 grams of powder media in 1000 ml distilled water. Shake well & heat 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.

Quality Control

Physical 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

pH range 7.10-7.50

Cultural Response/Characteristics
DM 1181: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Motility	Indole production(addition of Kovac,s)	H_2S
Escherichia coli ATCC 25922	50-100	luxuriant	Positive growth away from stabline causing turbidity	Positive reaction, red ring at the interface of the medium	Negative reaction
Salmonella Typhimurium ATCC 14028	50-100	Luxuriant	Positive growth away from stabline causing turbidity	Negative reaction	Positives reaction blackening of medium
Shigella flexneri ATCC 12022	50-100	Luxuriant	Negative growth along the stabline surrounding medium remains clear	Negative reaction	Negative reaction
Salmonella Paratyphi A ATCC 9150	50-100	Luxuriant	Positive growth away from stabline causing turbidity	Negative reaction	Negative reaction
Salmonella Paratyphi B ATCC 8739	50-100	luxuriant	Positive growth away from stabline causing turbidity	Negative reaction	Positives reaction blackening of medium
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	Negative growth along the stabline surrounding medium remains clear	Negative reaction	Negative reaction

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

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.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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