SIM

INTENDED USE

SIM Medium is used to differentiate enteric bacilli on the basis of sulfide production, indole formation and motility.

SUMMARY AND EXPLANATION

Hydrogen sulfide production, indole formation and motility are distinguishing characteristics which aid in the identification of the *Enterobacteriaceae*, especially *Salmonella* and *Shigella*. SIM Medium, therefore, is useful in the process of identification of enteric pathogens.

PRINCIPLE

The ingredients in SIM Medium enable the determination of three activities by which enteric bacteria can be differentiated. Sodium thiosulfate and ferrous ammonium sulfate are indicators of hydrogen sulfide production. The ferrous ammonium sulfate reacts with H_2S gas to produce ferrous sulfide, a black precipitate.[1] The casein peptone is rich in tryptophan, which is attacked by certain microorganisms resulting in the production of indole. The indole is detected by the addition of chemical reagents following the incubation period. Motility detection is possible due to the semisolid nature of the medium. Growth radiating out from the central stab line indicates that the test organism is motile.

REAGENTS (FORMULA)

Pancreatic Digest of Casein	20.0	g
Peptic Digest of Animal Tissue	6.1	g
Ferrous Ammonium Sulfate	0.2	g
Sodium Thiosulfate	0.2	g
Agar	3.5	g
Deionized Water	1000.0	ml

PROCEDURE

Loosen caps, boil and cool before use. Using growth from a pure culture, stab an inoculating needle two-thirds of the distance to the bottom in the center of the tube. Incubate tubes with loosened caps for 18-24 hours at 35 ± 2°C in an aerobic atmosphere.

EXPECTED RESULTS

Following incubation, observe for motility (diffuse growth outward from the stab line or turbidity throughout the medium) and for H_2S production (blackening along the stab line). To detect indole production, add three or four drops of Kovacs' reagent[2] and observe for a red color (positive reaction).

Consult appropriate references for activities of specific microorganisms.[2-4]

QUALITY CONTROL

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

Organisms	Incubation	Results
Escherichia coli ATCC 25922	35 ± 2°C for 18-24 hours	Growth, Motility (+), H2S (-), Indole (+)
Shigella sonnei ATCC 9290	35 ± 2°C for 18-24 hours	Growth, Motility (-), H2S (-), Indole (-)

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BIBLIOGRAPHY

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2. Ewing. 1986. Edwards and Ewing's identification of Enterobacteriaceae, 4th ed. Elsevier Science Publishing Co., Inc., New York, N.Y.

3. Holt, Krieg, Sneath, Staley and Williams (ed.). 1994. Bergey's Manual™ of determinative bacteriology, 9th ed. Williams & Wilkins, Baltimore, Md.

4. Farmer. 1999. In Murray, Baron, Pfaller, Tenover and Yolken (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.

CBSA life

155-196 Innovation Drive, Winnipeg, MB, R3T 2N2, Canada

Phone: +1 (204) 269-2255 Email: info@cbsalife.com Website: https://cbsalife.com