T.S.I. AGAR

Differential medium for enterobacteria identification.

TYPICAL FORMULA	(g/l)
Peptospecial	20.0
Lactose	10.0
Sucrose	10.0
Sodium Chloride	5.0
Beef Extract	3.0
Yeast Extract	3.0
Glucose	1.0
Ferric Sulphate	0.2
Sodium Thiosulphate	0.3
Phenol Red	0.025
Agar	12.0

Final pH = 7.3 ± 0.2 at 25 °C.

DIRECTIONS

Suspend 64.5 g of powder in 1 liter of distilled or deionized water. Heat to boiling until completely dissolved. Dispense into final tubes. Sterilize in autoclave at 121°C for 15 minutes. Cool the tubes in a slanting position so to obtain a butt at least 3.5 cm deep.

DESCRIPTION

T.S.I. AGAR is a medium used for the differentiation of enterobacteria according to:
1. lactose, glucose and sucrose fermentation.
2. to hydrogen sulphide and carbon dioxide production.

TECHNIQUE

Inoculate the butt by stabbing and the slope by streaking the suspected colonies taken from a selective isolation medium. Incubate at 36 ± 1 °C for 24 hours with the caps loosened to favor gas exchanges. Fermentation of the sugars is shown with change to yellow of phenol red indicator. The glucose concentration is 1/10 of that lactose and sucrose, for an earlier detection of bacteria that ferment only glucose. Fermentation of glucose determines on surface (where are aerobic conditions) a production of ammonium ions and change to red (alkaline pH) of phenol red indicator; while in the butt, where are anaerobic conditions, the glucose fermentation determines the production of acids and change to yellow (acid pH) of phenol red indicator. Fermentation of lactose and sucrose determines an acid reaction on the surface. Sucrose is added to T.S.I. Agar to eliminate some sucrose-fermenting lactose non-fermenting organisms such as *Proteus* and *Citrobacter spp.* Sodium thiosulphate is reduced to hydrogen sulphide which then reacts with an iron salt yielding the typical black iron sulphide. Gas production is determined by the formation of bubbles up to a more or less severe fragmentation of the agar.

QUALITY CONTROL

Dehydrated medium
Appearance: free-flowing, homogeneous.
Color: pink.
Prepared medium
Appearance: slightly opalescent, may have a slight precipitate.
Color: red.
Incubation conditions: 36 ± 1 °C for 18-48 hours.

Microorganism	ATCC	Growth	Acid	Gas	H_2S
Pseudomonas aeruginosa	9027	good	-	-	-
Salmonella enteritidis	13076	good	+/-	+	+
Escherichia coli	25922	good	+	+	-
Shigella flexneri	12022	good	+/-	-	-

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PERFORMANCE AND LIMITATIONS

Further biochemical tests and serological typing must be performed for definitive identification and confirmation of organisms.

STORAGE

The powder is very hygroscopic: store the powder at 10-30 °C, in a dry environment, in its original container tightly closed and use it before the expiry date on the label or until signs of deterioration or contamination are evident.
Store prepared tubes at 2-8 °C.

REFERENCES

1. Russell, F.F. (1911). J. Med. Res. **25**: 217.
2. Association of Official Analytical Chemists. (1995). Official methods of analysis of AOAC International, 16th ed.
3. US Pharmacopoeia 24, NF 19 (2000).

PRESENTATION

Product	REF	Σ
T.S.I. AGAR (7.7 l)	610055	500 g
T.S.I. AGAR (1.5 l)	620055	100 g

TABLE OF SYMBOLS

LOT Batch code	Caution, consult accompanying documents	Manufacturer	Contains sufficient for <n> tests	IVD *In Vitro* Diagnostic Medical Device
REF Catalogue number	Fragile, handle with care	Use by	Temperature limitation	Keep away from heat source

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