Costein's LDS Test Medium

M1621

Costeins LDS Test Medium is employed for the identification of members of *Enterobacteriaceae* on the basis of lysine decarboxylase and hydrogen sulphide production.

Composition**

Ingredients	Gms / Litre
Meat peptone	4.500
Papaic digest of soyabean meal	2.000
Yeast extract	3.000
Sodium chloride	5.000
D-Glucose	1.000
L-Lysine monohydrochloride	10.000
Sosium thiosulphate	0.200
Ammonium iron (II) sulphate	0.200
Bromocresol purple	0.032
Agar	6.000
Final pH (at 25°C)	5.6±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 32 grams in 1000 ml distilled water. Dispense into test tubes to a depth of approximately 5 cm, if possible cover with a 5 mm layer of viscous paraffin. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Allow the tubes to solidify in a vertical position.

Principle And Interpretation

Costeins LDS (Lysine Decarboxylase Sulfhydrase) Test Medium is formulated by Costein (1). This is the test culture medium for the simultaneous detection of lysine decarboxylase (LDC) and hydrogen sulphide production (2). Pietzsch recommended this medium on account of its high degree of reliability (3).

Meat peptone, papaic digest of soyabean meal and yeast extract in the medium provides nitrogen and other nutrients necessary to support bacterial growth. Sodium chloride helps in maintaining osmotic balance. Bromocresol purple is the pH indicator. Sodium thiosulphate acts as a reducing agent and maintains a low oxygen tension in the medium. *Enterobacteriaceae* grows poorly at low pH; therefore, their growth is poor on this medium due to its low pH value of 5.6. LDC-positive species tend to neutralize the medium as a result of cadaverine production due to decarboxylation of lysine; the conditions for growth are thus improved and the pH indicator changes its colour from yellow to violet. Species which can also reduce thiosulphate to hydrogen sulphide, cause an additional blackening of the violet medium due to the precipitation of iron sulphide. LDC-negative species do not increase the pH value of the medium; the pH indicator does not undergo a colour change. Therefore growth of these microorganisms is poor and H2S positive species are thus unable to produce any hydrogen sulphide e.g. *Citrobacter, Proteus vulgaris, Proteus mirabilis, Providentia, Enterobacter, Shigella* show yellow coloured growth. LDC-positive and H2S positive organisms give black colour and may be surrounded by a violet zone e.g. Salmonella, Edwardsiella and others LDC-positive and H2S negative organism are violet in colour e.g. *Escherichia, Klebsiella, Hafnia, Serratia* and some rare *Salmonella* and others.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 0.6 % Agar gel

Colour and Clarity of prepared medium

Yellow coloured, clear to slightly opalescent gel forms in tubes as slants

Reaction
Reaction of 3.2% w/v aqueous solution at 25°C. pH : 5.6±0.2

pH
5.40-5.80

Cultural Response
M1621: Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Colour change of medium
Cultural Response			
Escherichia coli ATCC 25922	50-100	good	violet
Serratia marcescens ATCC 14756	50-100	good	violet
Salmonella Typhimurium ATCC 14028	50-100	good	violet and black
Salmonella Enteritidis ATCC 13076	50-100	good	violet and black
Salmonella Arizonae ATCC 13314	50-100	good	violet and black
Shigella flexneri ATCC 12022	50-100	fair	yellow
Citrobacter freundii ATCC 8090	50-100	fair	yellow
Proteus mirabilis ATCC 29906	50-100	fair	yellow
Proteus vulgaris ATCC 13315	50-100	fair	yellow

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. Costein I. D., 1968, Einzelnahrboden fur die biochemische Ausscheidung van Salmonella-und Arizona-Kulturen- Zbl. F. Bakt. I. Orig., 206:390-395.
2. Edwards P. R., Fife M. A., 1961, Lysine-Iron Agar in the detection of Arizona cultures, Appl. Microbiol., 9:478-480.
3. Pietzch O., 1975, Der Voges-Proskauer- Schnelltest und der Lysindecarboxylase-Sulfhydrase-Test, Zwei Schnellmethoden fur die Enterobacteriaceae Diagnostik., - Arch. lebensmittelhyg., 26: 23-24.

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