TM 986 – DOUBLE SUGAR AGAR, RUSSELL

INTENDED USE

For differentiation of gram-negative enteric bacilli based on their ability to ferment dextrose and lactose, with or without gas formation.

PRODUCT SUMMARY AND EXPLANATION

Gram-negative bacilli belonging to *Enterobacteriaceae* are the most frequently encountered bacterial isolates recovered from clinical specimens. Definitive identification of the members of *Enterobacteriaceae* requires a battery of biochemical tests. Double Sugar Agar, Russell is used for the differentiation of gram-negative enteric bacilli on the basis of their ability to ferment dextrose and lactose with or without gas formation. This medium was originally formulated by Russell using litmus indicator. It was later modified by Nichols and Nichols and Wood by replacing the litmus indicator with phenol red. This medium is used for differentiating gram-negative enteric bacilli especially the colon-typhoid-salmonellae-dysentery groups based on the fermentation of the double sugars incorporated namely, dextrose and lactose.

On incubation of inoculated tubed medium, acid production under aerobic condition (on the slant) and under anaerobic condition (in the butt) can be detected by the change in colour of the indicator. Gaseous fermentation is indicated by splitting of the agar or by bubble formation in the butt. Organism like Salmonella Typhi capable of fermenting dextrose but not lactose will show an initial acid slant in short incubation period. Over a period of time as the dextrose gets consumed the reaction under aerobic condition reverts and becomes alkaline due to the oxidation of acids. Under anaerobic condition (in the butt), the same organism fails to revert the reaction and remains acidic.

COMPOSITION

Ingredients	Gms / Ltr
Peptone	2.500
Tryptone	7.500
Beef extract	3.000
Lactose	10.000
Dextrose (Glucose)	1.000
Sodium chloride	5.000
Phenol red	0.025
Agar	15.000

PRINCIPLE

The medium consists of Peptone, Tryptone and Beef extract serve as sources of carbon, nitrogen, vitamins and other essential nutrients. Lactose and dextrose serve as sources of energy by being the fermentable carbohydrates. Phenol red is the pH indicator in the medium that is pink under alkaline conditions and yellow under acidic conditions. Sodium chloride helps to maintain the osmotic equilibrium of the medium. Pure cultures are used to inoculate the tubed medium.

INSTRUCTION FOR USE

- Dissolve 44.02 grams in 1000 ml purified/distilled water.
- Heat to boiling to dissolve the medium completely.
- Dispense in tubes or as desired and sterilize by autoclaving at 118-121°C (correspond to 12-15psi pressure respectively) for 15 minutes. Cool to 45-50°C.
- Allow the tubes to solidify in slanting position to form a generous butt.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Light yellow to pink homogeneous free flowing powder.
Appearance of prepared medium : Red coloured, clear to slightly opalescent gel forms in tubes as slants.
pH (at 25°C) : 7.3 ± 0.2

INTERPRETATION

Cultural characteristics observed after incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Slant	Butt	Gas	Incubation Temperature	Incubation Period
Klebsiella aerogenes	13048	50-100	Luxuriant	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium	Positive reaction	35-37°C	18-40 Hours
Escherichia coli	25922	50-100	Luxuriant	Acidic reaction, yellowing of the medium	Acidic reaction, yellowing of the medium	Positive reaction	35-37°C	18-40 Hours
Proteus vulgaris	13315	50-100	Luxuriant	Alkaline reaction, red colour of the medium	Acidic reaction, yellowing of the medium	Positive reaction	35-37°C	18-40 Hours
Pseudomonas aeruginosa	27853	50-100	Luxuriant	Alkaline reaction, red colour of the medium	Alkaline reaction, red colour of the medium	Negative reaction	35-37°C	18-40 Hours
Salmonella Typhimurium	14028	50-100	Luxuriant	Alkaline reaction, red colour of the medium	Acidic reaction, yellowing of the medium	Positive reaction	35-37°C	18-40 Hours
Shigella dysenteriae	13313	50-100	Luxuriant	Alkaline reaction, red colour of the medium	Acidic reaction, yellowing of the medium	Negative reaction	35-37°C	18-40 Hours

PACKAGING:

In pack size of 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.
Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

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4. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore
5. Nichols H. J., 1921, J. Infect. Dis., 2982
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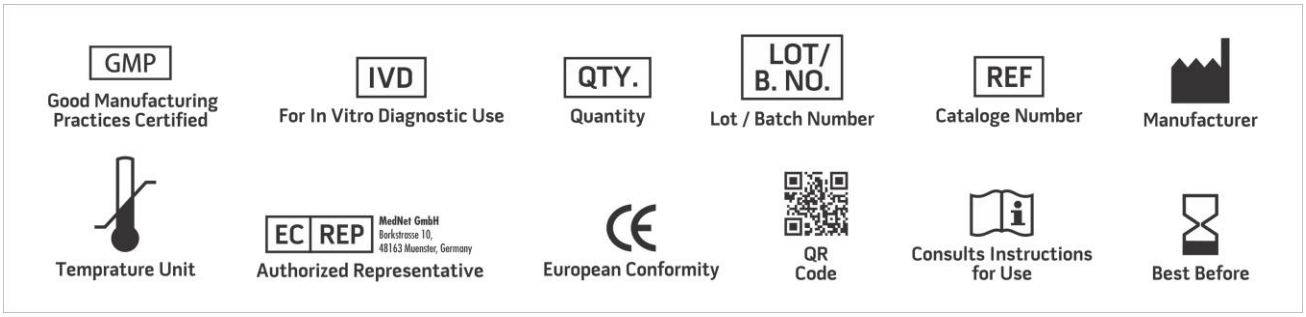

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**

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