Mannitol Motility Nitrate Medium

M1320

Mannitol Motility Nitrate Medium is used for studying mannitol fermentation, nitrate reduction and motility of bacteria.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Potassium nitrate	1.000
Mannitol	7.500
Phenol red	0.040
Agar	3.500
Final pH (at 25°C)	7.6±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 22.04 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense into test tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool the medium in an upright position.

Principle And Interpretation

Mannitol Motility Nitrate Medium is designed to differentiate bacteria on the basis of their motility, ability to ferment mannitol and reduce nitrate (1). The highly nutritious casein enzymic hydrolysate supports luxuriant growth of bacteria. Semisolid nature of the medium due to 0.35% agar helps to detect motility. Motile bacteria produce diffused growth throughout the medium while non motile bacteria grow only along the line of inoculation. Combination of mannitol and phenol red helps differentiation of mannitol fermenting bacteria which turns the medium yellow.

Reduction of nitrate is generally an anaerobic respiration in which an organism derives its oxygen form nitrate. Members of *Enterobacteriacae* characteristically reduce nitrate to nitrite which reacts with sulfanilic acid and dimethyl-1-napthylamine to produce the red colour.

Quality Control

Appearance
Light yellow to pink homogeneous free flowing powder

Gelling
Semisolid, comparable with 0.35% Agar gel.

Colour and Clarity of prepared medium
Red coloured clear to slightly opalescent semisolid gel forms in tubes

Reaction
Reaction of 2.20% w/v aqueous solution at 25°C. pH : 7.6±0.2

pH
7.40-7.80

Cultural Response
M1320: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Growth	Mannitol fermentation	Motility	Nitrate reduction
Cultural Response				
Escherichia coli ATCC 35218	luxuriant	Positive reaction, yellow colour	Positive, growth away from stabline causing turbidity	Positive reaction red colour developed within 1-2 minutes

Proteus vulgaris ATCC 13315	luxuriant	Negative reaction, no colour change or red	Positive, growth away from stabline causing turbidity	Positive reaction red colour developed within 1-2 minutes
Salmonella Typhi ATCC 6539	luxuriant	Positive reaction, yellow colour	Positive, growth away from stabline causing turbidity	Positive reaction red colour developed within 1-2 minutes
Shigella sonnei ATCC 25931	luxuriant	Positive reaction, yellow colour	Negative, growth along the stabline,surrounding medium remains clear	Positive reaction red colour developed within 1-2 minutes
Staphylococcus aureus ATCC 25923	luxuriant	Positive reaction, yellow colour	Negative, growth along the stabline,surrounding medium remains clear	Positive reaction red colour developed within 1-2 minutes
Staphylococcus epidermidis ATCC 12228	luxuriant	Negative reaction, no colour change or red	Negative, growth along the stabline,surrounding medium remains clear	Positive reaction red colour developed within 1-2 minutes

Storage and Shelf Life

Store below 30°C in tightly closed container and prepared media at 2 – 8°C. Use before expiry date on label.

Reference

1.MacFaddin, 1980, Biochemical Tests, for the Identification of Medical Bacteria, 2nd ed. Williams and Wilkins Baltimore.

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