

Technical Information

Lactic Bacteria Differential Agar

Product Code: DM 2087

Application: - Lactic Bacteria Differential Agar is used for differentiation of homofermentative and heterofermentative lactic acid bacteria.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Papaic digest of soyabean meal	1.500
Casein acid hydrolysate	3.000
Yeast extract	1.000
Fructose	2.500
Monopotassium phosphate	2.500
Bromocresol green	0.055
Agar	15.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

McDonald et al ⁽¹⁾ formulated Lactic Bacteria Differential Agar for differentiation of homofermentative lactobacilli and heterofermentative streptococci. Lactobacilli and Streptococci are used as starter cultures in food and dairy industry. Streptococci grow first and produce metabolites, lowering the redox potential which enables Lactobacilli to grow. Lactobacilli synthesize products, which stimulate growth of Streptococci. Medium constituents like casein enzymic hydrolysate, papaic digest of soyabean meal and yeast extract supply all the necessary nutrients for the growth of lactic bacteria. Fructose is the fermentable carbohydrate in the medium. Bromo cresol green is the pH indicator. Heterofermentative lactic acid bacteria produce CO₂, lactic acid, acetic acid, ethanol and mannitol. Homofermentative lactic acid bacteria produce only lactic acid. Homofermentative lactic acid bacteria produce lactic acid from fructose and is indicated by yellow colour formation. Heterofermentative lactic acid bacteria induce lesser acidification and thus vary in the colour formation by the indicator in the medium. Homofermentative bacteria cultivated on this medium form bluish-green colony on agar while heterofermentative bacteria do not form much-coloured colony on agar surface.

Methodology

Suspend 35.55 grams of powder media in 1000 ml distilled water. Add 1 gram of polysorbate 80. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Mix well and pour into sterile Petri plates.

Quality Control

Physical Appearance

Light yellow to bluish grey homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Blue coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 3.56% w/v aqueous solution at 25°C. pH : 7.0±0.2



Dehydrated Culture Media
Bases / Media Supplements

pH Range 6.80-7.20

Cultural Response/Characteristics

DM 2087: Cultural characteristics observed with added polysorbate 80, after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colours of medium
<i>Lactobacillus casei</i> ATCC 9595	50-100	Luxuriant	>=50%	Green
<i>Lactobacillus plantarum</i> ATCC 8014	50-100	Luxuriant	>=50%	Green
<i>Streptococcus thermophilus</i> ATCC 14485	50-100	Luxuriant(incubated at 45 ⁰ C)	>=50%	Bluish-green
<i>Streptococcus cremoris</i> ATCC 19257	50-100	Luxuriant(incubated at 30 ⁰ C)	>=50%	blue

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8⁰ in sealable plastic bags for 2-5 days.

Further Reading

1. McDonald L.C., McFecters R.F., Daeschel M.A. and Fleming H.P., 1987, Appl. Environ. Microbiol., 53:1382.

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