

Technical Information

Minimal Broth, Davis

Product Code: DM 1389

Application: Minimal Broth, Davis is recommended for the isolation and characterization of nutritional mutants of *Escherichia coli*.

Composition**

Ingredients	Gms / Litre
Dextrose	1.000
Ammonium sulphate	1.000
Dipotassium phosphate	7.000
Monopotassium phosphate	2.000
Sodium citrate	0.500
Magnesium sulphate	0.100
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Nutritional mutants of *Escherichia coli* obtained by the exposure wild type *E. coli* to ultra violet light require a nutritionally complete medium to grow. Minimal media can be supplemented with the desired additives to study nutritional characters of the nutritional mutants. This Minimal media is the formulations of Davis ⁽¹⁾ and Lederberg ⁽²⁾. Minimal media contain the nutrients necessary for the growth of wild type *E. coli* strains. By the random isolation method nutritional mutants derived from irradiated cultures of wild type *E. coli* can also be isolated ⁽²⁾ on this media. These mutants also be isolated by the use of penicillin as discussed else where (Davis and Lederberg ⁽¹⁾ Nester et al ⁽³⁾.)

Dextrose is an energy source. Dipotassium and monopotassium phosphates provide buffering to the medium. Magnesium sulphate and ammonium sulphate are sources of ions that simulate metabolism.

The nutritional supplements to be added to minimal medium depend upon the type of mutant to be screened as for amino acids, vitamins, nucleic acids or other substances. This can be achieved by addition of vitamin assay casamino acids plus tryptophan or a mixture of water soluble vitamins, yeast or nucleic acid extracts.

A cell suspension of wild type *E. coli* is irradiated and cultured on Minimal Agar (DM1512) supplement with all the necessary growth requirements. This will allow growth of both wild type cells (prototrophs) and mutant cells. The selected colonies are then added to Minimal Broth, Davis and Minimal Broth Davis supplemented with the growth requirements and incubated at 35°C for 24 hours. Growth in the Minimal Broth supplemented with growth requirements and no growth in Minimal Broth indicates a mutant for that particular factor.

Methodology

Suspend 11.6 grams of powder media in 1000 ml distilled water. Shake well & heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Mix well and dispense as desired.

Quality Control

Physical Appearance

White to cream homogeneous free flowing powder

Colour and Clarity of prepared medium

Colourless clear solution in tubes

Reaction

Reaction of 1.06% w/v aqueous solutions at 25°C. pH : 7.0±0.2

pH range 6.80-7.20

Cultural Response/Characteristics

DM1389: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism

Escherichia coli ATCC 13762

Escherichia coli ATCC 23724

Growth

Good-luxuriant

luxuriant

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: 2-8^o in sealable plastic bags for 2-5 days.

Further Reading

1. Davis B. D., 1949, Proc. Natl Acad. Sci, 35:1.
2. Lederberg J., 1950, Methods in Med. Res., 3:5.
3. Nester E. W., Schafer M. and Lederberg J., 1963, Genetics, 48:529.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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