

## Technical Information

### Minimal Agar

#### Product Code: DM 1512

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

#### Composition\*\*

Ingredients	Gms / Litre
Dextrose	1.000
Dipotassium phosphate	7.000
Monopotassium phosphate	2.000
Sodium citrate	0.500
Magnesium sulphate	0.100
Ammonium sulphate	1.000
Agar	15.000
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 of wild type *E. coli* to ultra violet light need 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 are the formulations of Davis <sup>(1)</sup> and Lederberg <sup>(2)</sup>. Minimal media contain the necessary nutrients only for the growth of wild type *E. coli* strains. By the random isolation method described by Lederberg, nutritional mutants derived from irradiated cultures of wild type *E. coli* can also be isolated on this media <sup>(2)</sup>. These mutants can also be isolated by the use of penicillin as described by Davis and Lederberg <sup>(1)</sup> and Nester et al <sup>(3)</sup>.

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 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 (DM1389) 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 26.6 grams of powder media in 1000 ml distilled water. 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.



Dehydrated Culture Media  
Bases / Media Supplements

## Quality Control

### Physical Appearance

Off-white to beige homogeneous free flowing powder

### Gelling

Firm, comparable with 1.5% Agar gel

### Colour and Clarity of prepared medium

Medium amber coloured clear to slightly opalescent gel forms in Petri plates

### Reaction

Reaction of 2.6% w/v aqueous solution at 25°C. pH : 7.0±0.2

### pH range

6.80-7.20

### Cultural Response/Characteristics

DM1512: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery
<i>Escherichia coli</i> ATCC 13762	50-100	luxuriant	>=50%
<i>Escherichia coli</i> ATCC 23724	50-10	Luxuriant	>=50%

## 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<sup>o</sup> 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.
- The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at CDH is true and accurate
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