15758 Davis Minimal Broth without Dextrose (Minimal Broth, Davis without Dextrose)

Minimal medium recommended for the isolation and characterisation of nutritional mutants of *Escherichia coli*.

Composition:

Ingredients	Grams/Litre
Dipotassium phosphate	7.0
Monopotassium phosphate	2.0
Sodium citrate	0.5
Magnesium sulfate	0.1
Ammonium sulfate	1.0
Final pH 7.0 +/- 0.2 at 25°C	

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

Appearance: Yellowish white coloured, homogeneous, free flowing powder.
Colour and Clarity: Colourless, clear solution.

Directions:
Suspend 10.6 g in 1000 ml of purified water. Boil to dissolve the medium completely. Sterilize by autoclaving at 121°C for 15 minutes. Mix well.

Principle and Interpretation:
Minimal media prepared according Davis and described by Lederberg for the isolation of nutritional mutants of *E. coli*. The minimal media contains the necessary nutrients only for the growth of wild type *E. coli* strains. The random isolation and delayed enrichment method, described by Lederberg, can be used to isolate nutritional mutants derived from irradiated cultures of wild type *E. coli*. With added dextrose it also supports the growth of nutritional mutants of *Bacillus subtilis*. *B. subtilis* mutants can be isolated by the same techniques as *E. coli* or by the penicillin method described by Nester et al.
A cell suspension of wild type *E. coli* is irradiated and cultured on Davis Minimal Agar (79332) and incubated at 35°C for 24 hours. The isolated colonies are cultured in tubes of Davis Minimal Broth (93753) and Davis Minimal Broth without Dextrose (15758). After 24 hours incubation at 35°C growth in the broths is examined. A mutant is growing in the Davis Minimal Broth but not in the Davis Minimal Broth without Dextrose.

After the mutants are isolated, they are characterized biochemically by growth in minimal broth supplemented with specific growth factors or groups of growth factors. It is generally best to classify mutants according to their requirements for amino acids, vitamins, nucleic acids or other substances. This is done by supplementing the minimal medium with certain peptones, vitamin mixtures, nucleic acid or yeast extract, depending on the particular mutants desired. The supplemented minimal broth is inoculated with a slightly turbid suspension of the mutant colonies and incubated for 24 hours at 35°C. When a major growth factor group response in obtained, the characterization is carried further by the same general procedure to subgroups and finally to individual growth substances (e.g. single amino acids).
Phosphate salts are the buffering system. Citrate is a carbon sources and is needed to produce enegy. Ammonium Sulfate is a source of sulfur and nitrogen. Magnesium is a cofactor for many metabolic reactions.

Cultural characteristics after 24 hours at 35°C

Organisms (ATCC)	Growth
Escherichia coli (13762)	+++
Escherichia coli (23724)	+++

References:

1. Davis, Proc. Nat'l Acad. Sci., 35:1 (1949)
2. J. Lederberg, Isolation and characterization of biochemical mutants of bacteria., Methods in Med. Res., 3:5-21 (1950)
3. Nester, Schafer, and Lederberg. Genetics, 48:529 (1963)

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices