

Media

Culture Media (Sing. Medium).

Culture — Means Preparation of cells or bacteria grown in an artificial medium.

— To grow & develop

Medium → A preparation needed for growth and development of organisms, cell, tissue, organ etc.

- (i) Natural →
- (ii) Artificial →
- (iii) Polluted →

(i) Artificial → Prepared in laboratories and industries for the proper growth and development of microorganisms

- (a) Synthetic / - Defined:
- (a) Complex.

Defined or Synthetic → A medium All of its components are known

e.g. Cynobacterial and Eukaryotic culture media.

1) CO₂ as a Carbon source → Sodium Carbonate or Bicarbonate
Na2CO3 or NaHCO3.

Ammonium Nitrate as an source of → Nitrogen Sodium Nitrate NaNO3.

- 3) Sulphate
- 4) Phosphate

5) a Variety of Materials.

BG-II

Medium for Cyanobacteria

NaNO ₃	1.5g / l
KH ₂ PO ₄ · 3H ₂ O	0.04
MgSO ₄ · 7H ₂ O	0.075
Ca CaCl ₂ · 2H ₂ O	0.036
Citric Acid	0.006
Ferric ammonium Citrate	0.006
EDTA (Na ₂ Mg Salt)	0.001
Na ₂ CO ₃	0.02
Trace metal solution	1.0 ml
Final P ^H →	7.4.

For E. coli

②

Glucose —	1.0 g/l.
Na ₂ HPO ₄	16.4
KH ₂ PO ₄	0.15
(NH ₄) ₂ SO ₄	0.2
MgSO ₄ · 7H ₂ O	0.200.0 mg
CaCl ₂	0.010.00 mg
FeSO ₄ · 7H ₂ O	0.000.50 mg.
Final P ^H —	06.8 — 7.0.

x) Photoautotrophs ~~are~~ are mainly grown on such simple media.

x) Many chemoorganotrophic heterotrophs can be grown on

x) Synthetic medium ^{supplemented} with glucose as a carbon source & Ammonium salt as Nitrogen source

x) These medium may contain few or a large number of compounds, but all are known as their constituents and elements.

x) Defined media are ~~are~~ widely known in research as it is desirable to know what the experimental microorganism is metabolizing.

Complex Media :- They contain such ingredients

that some of the ^{are of} unknown chemical composition.

(eg. Peptones; meat extract (Beef extract); Yeast extract etc as they contain undefined components).

x) They are very useful as they fulfil the requirements of a large number of microbes and they are used to grow on the ~~the~~ unknown microbes. (Microbes which nutritional requirements are unknown) in such case we cannot construct a defined medium).

Many fastidious (Payin a lot of attention to detail bacteria - very concerned about chemicals) - Some of them even require Blood or Serum

e.g. Serum albumin.

1) Peptones → Proteins hydrolysed prepared by partial proteolytic digestion of meat, casein, soya meal, gelatin or some other protein sources.

They serve as Source of carbon, nitrogen & energy.

- 1) Beef extract } → Aqueous extract of lean Beef.
- 2) Yeast extract } → " " " Brewer's Yeast.

3) Beef extract → possess Amino acids, peptides, nucleotides Organic acids, Vitamins & Minerals.

Yeast Extracts :- E. Excellent source of Vitamin B and Carbon and Nitrogen.

e.g. Commonly used Complex media are:

- (i) Nutrient Broth.
- (ii) Tryptic soy broth.
- (iii) Mac Conkey agar.

Nutrient Broth

Peptone (Gelatin hydrolysate) \rightarrow 0.5 gm/l.
Beef extract \rightarrow 0.3 gm.

Tryptic Soy broth

Tryptone (Gelatin by Pancreatic digestion of Casein)	- 17 gm/l
Pepton (soyabean digest)	0.3 gm
Glucose	0.25 gm
Sodium chloride	0.500 gm
Dipotassium Phosphate	0.25 gm

Mac Conkey Agar

- i) ~~Pancreatic~~ digestion of ge