

the nutritional requirements of many different microorganisms. In addition, complex media are needed because the nutritional requirements of a particular microorganism are unknown and thus a defined medium cannot be constructed.

Complex media contain undefined components like peptones, meat extract and yeast extract. Peptones are protein hydrolysis prepared by partial proteolytic digestion of meat casein, soya meal, gelatin, and other protein sources. They serve as sources of carbon, energy and nitrogen.

Functional types of Media -

- (i) Supportive media
- (ii) Enriched media
- (iii) Selective media
- (iv) Differential media

(i) Supportive media - Media such as tryptic soy broth and tryptic soy agar are called general purpose media or supportive media because they sustain the growth of many microorganisms.

(ii) Enriched media - Blood and other special nutrients may be added to general purpose media to encourage the growth of fastidious microbes. The specially fortified media are called enriched media (blood agar).

(iii) Selective media - These media favour the growth of particular microorganisms. Bile salts or dyes like basic fuchsin and crystal violet favour the growth of gram-negative bacteria by inhibiting the growth of gram-positive bacteria, the dyes have no effect on gram negative organisms. Endo agar, eosin methylene blue agar and MacConkey agar are three media widely used for the detection of *E. coli* and related bacteria in water supplies and elsewhere. These

media contain dyes that suppress gram positive bacterial growth. MacConkey agar also contains bile salts.

(iv) Differential media - These media distinguish among different groups of microbes and even permit tentative identification of microorganisms based on their biological characteristics. Blood agar is both a differential medium and an enriched one. It distinguishes between hemolytic and non-hemolytic bacteria. Hemolytic bacteria (eg many streptococci and staphylococci isolated from throats) produce clear zones around their colonies because of red blood cell destruction. MacConkey agar is both differential and selective.