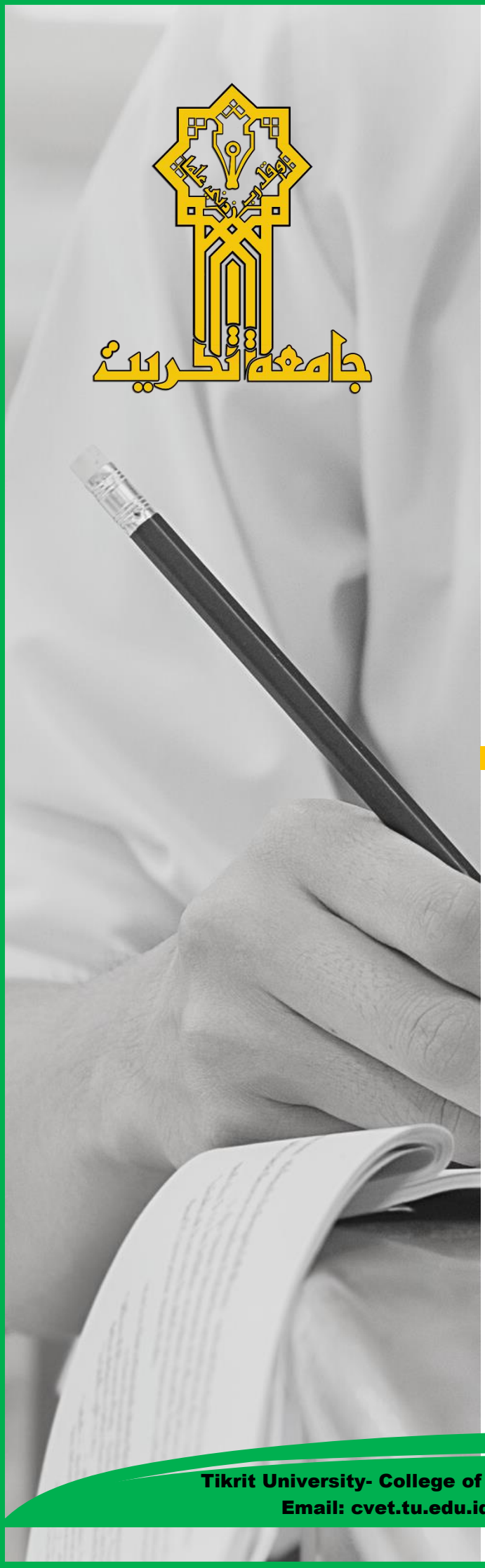

Tikrit University
College of Veterinary Medicine

Lect.2: Microbiology

Subject name: **Culture media**

Subject year:Third-year

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SCAN ME

Culture media

A culture medium (*media,* plural):- is nutrient material prepared in the laboratory for the
growth of bacteria, molds, and other microorganisms.

Agar:- is a complex polysaccharide derived from seaweed (red algae). The melting point is 97-100 °C and solidify at 42 °C. Usually agar is used in 1.5-2% (final concentration) to solidify the liquid medium. 0.5-1% to make the medium semisolid. 5% to decrease bacterial motility(prevents swarming, *proteus*).Gelatin medium (12-15%) is solid at 4 °C and Liquid at 25 °C.

Advantage of culture media are:-

1-For pure culture isolation.
2-For storage of stock cultures.
3-To observe specific biochemical reactions.
4-As transport media to preserve bacteria during transportation to the laboratory.
5-For preparation of antigens (vaccines and diagnostic kits).

Types of culture media:-

A- According to physical consistencies:

1- Liquid media.
2- Solid media.
3- Semi solid media.

B- According to the purpose of application:-

1- **Simple media**:- Contains the essential nutrients as source of nitrogen and carbon such as:
Peptone water, nutrient agar. , Nutrient broth

2**- Differential media:-**are media that contain substances that cause some bacteria to take on a different appearance from other species, allowing one to differentiate one species from another, e.g.

a**- MacConkey agar:-** Differentiate between lactose fermenting and non-lactose fermenting bacteria.

b**- Blood agar:-** Differentiate between hemolytic and non-hemolytic bacteria.

3- Selective media:- are media that contains inhibiting materials for growth of some bacteria and at the same time it is activating for some other types, such as

a- bismoth sulphate agar:-used to isolate *Salmonella* .it contains bismuth sulphate which works as indicator, and also contain Brilliant green material which is used as inhibiting factor to other bacteria .

b- manitol salt agar:- used to isolate *Staphylococcus*, it contains high concentration of NaCl as inhibitor and manitol sugar which works as differential agent between staph. fermenting (yellow) and non-fermenting staph. (reddish)

c. Salmonella Shigella agar:-used to grow in Salmonella and Shigella, it contains bile salt and brilliant green agar are working as inhibitor and also it contains neutral red and thiosulphate to produce H_2S gas .

4- Enriched media:- are media that used to grow most types of bacteria, it contains organic compounds, vitamins, salts and yeast, such as

a. blood agar
b.chocolate agar (heated blood agar)
c. brain heart infusion agar
d. serum agar
e. extract animal tissue.

5- Transport media:- Simple media used for transport samples from different regions to the lab. e.g. Stuart transport medium

The names some of the Labroatory Culture media

1- Nutrient agar (simple, solid)
Nutrient broth (simple, liquid) - 2
Peptone water (simple, liquid) - 3
4-Gelatin medium (semi solid)
MacConkey agar (selective and differential) - 5
6-Mannitol salt agar (selective and differential) for isolation of *staphyl*
7-Eosin Methylene blue agar (selective and differential) for isolation of *E. coli.*
8- Blood agar (enriched and differential)
9- Brain heart infusion agar (enriched, solid)
10- Brain heart infusion broth (enriched, liquid)
11- Salmonella Shigella agar (selective) for isolation of *Salmonella and Shigella.*
12- Brilliant green agar (selective) for isolation of *Salmonella.*
13- Lowenstein – Jensen medium (selective) for isolation of *Mycobacterium tuberculosis.*

Method of Preparation

1- Measure the amount of dehydrated medium that you need.

2- Dehydrated medium is dissolved in a measured amount of distilled water and pH adjusted.

3- Sterilize the medium using autoclave.

4- Cool after autoclaving.

5- Flame flask opening.

6- Pour in Petri dishes.

7- Flame medium surface.

8- Fame Petri dish cover.

9- Leave for cooling.

10- Put in special bags

11- keep in refrigerator.

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250
150
100
50