



Tikrit University
College of Veterinary Medicine

Lect.2 Practical Virology

Subject name: Cultivation of the viruses

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Lecturers link

Cultivation of Viruses :

Viruses are required an intracellular environment in order to grow up and replicate, thereby they are considered an intracellular microorganisms that need live cells as a source of nutrition , so based on that there are three methods for inoculating the viruses

- 1- Embryonated eggs
- 2-Lab experimental animals
- 3- Cell culture

Embryonated Eggs (Hen's Egg inoculation)

The most important factors which provided a logical reasons for using the embryonated eggs are:

- 1- Sterile environment of the embryonated eggs
- 2- Varieties of tissue types and fluid cavities which provides a good sources of nutrition and support for the virus

Preparation of eggs for cultivation :

- The eggs must be double checked to be in a healthy situation and should be sterilized by using iodine in the shell of the egg then followed by the step of penetration within a sterile needle .
- After finishing the inoculation , the side of penetration should be sealed with gelatin or paraffin.
- After incubation completed then the egg gets to be broken and which then followed by isolation of the virus from the tissue.

-In order to measure the level for ridding of the growth for the virus , the damage of the cells as well as the formation of lesions (pocks) on the cell membrane considered as an indicator for the growth and replication.

Note :

-The type of egg is the factor which determined the way of cultivation and in general the chick embryo is the most common type that have been used for cultivation by inoculation the virus and the time for inoculation determined by the type of the virus.

Practical Virology

Lecture 3

Viral cultivation and embryonated chicken eggs

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The cultivation of embryonated Chicken eggs:

-The type of egg is the factor which determined the way of cultivation and in general the embryonated chicken eggs is the most common type that have been used for cultivation.

-The most common parts of eggs which always using for the virus cultivation are:

- 1-Allantoic cavity.
- 2-Amniotic sac.
- 3-Yolk sac.
- 4- Chorioallantoic membrane(CAM).

1. Allantoic cavity:

- Inoculation is mainly in 9-11 day
- The purpose of this inoculation for production of vaccine of influenza virus, yellow fever, rabies.
- Most of avian viruses can be isolated using this method

2. Amniotic sac:

- Inoculation time in this method is 10-12 day
- Inoculation is mainly done for primary isolation of influenza virus and the mumps virus.
- Hemagglutination assay is the way to measure the growth and replication of virus in egg embryo.

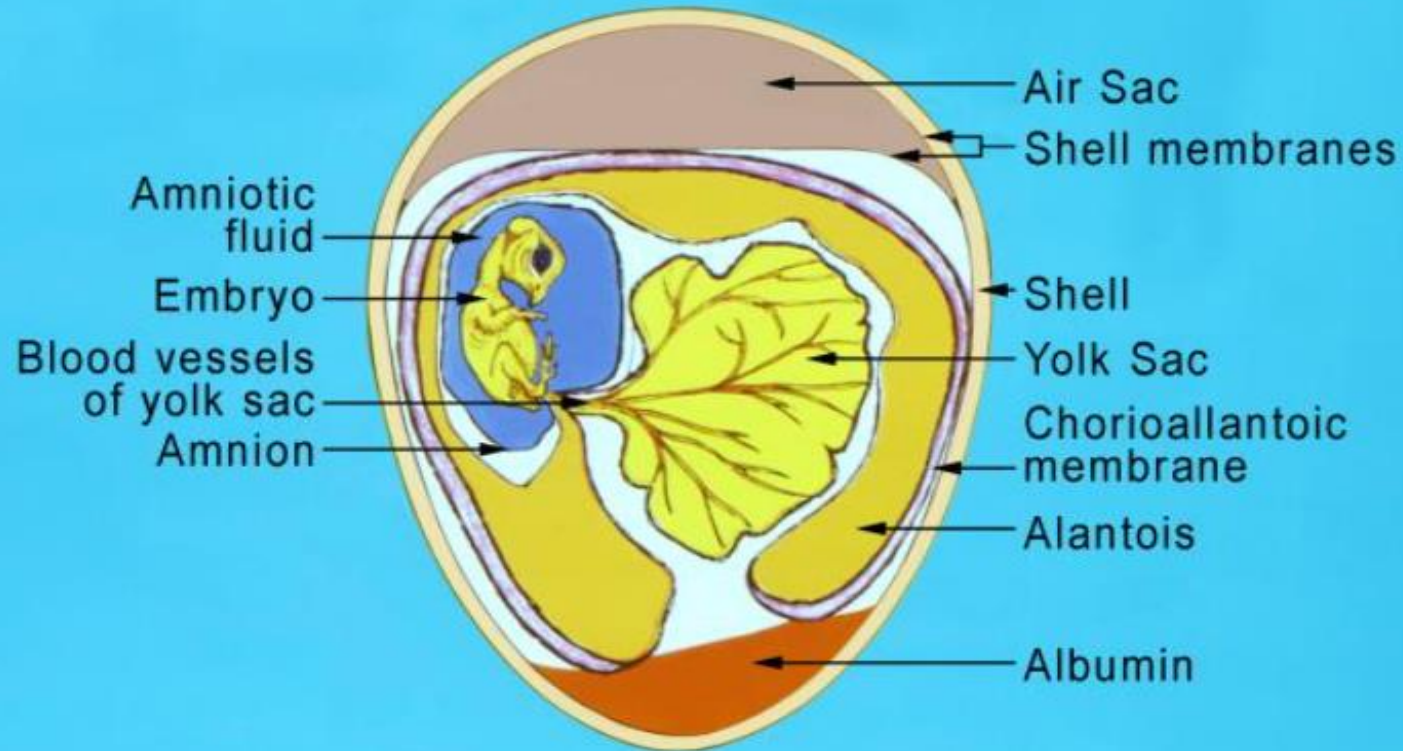
4. Yolk sac inoculation:

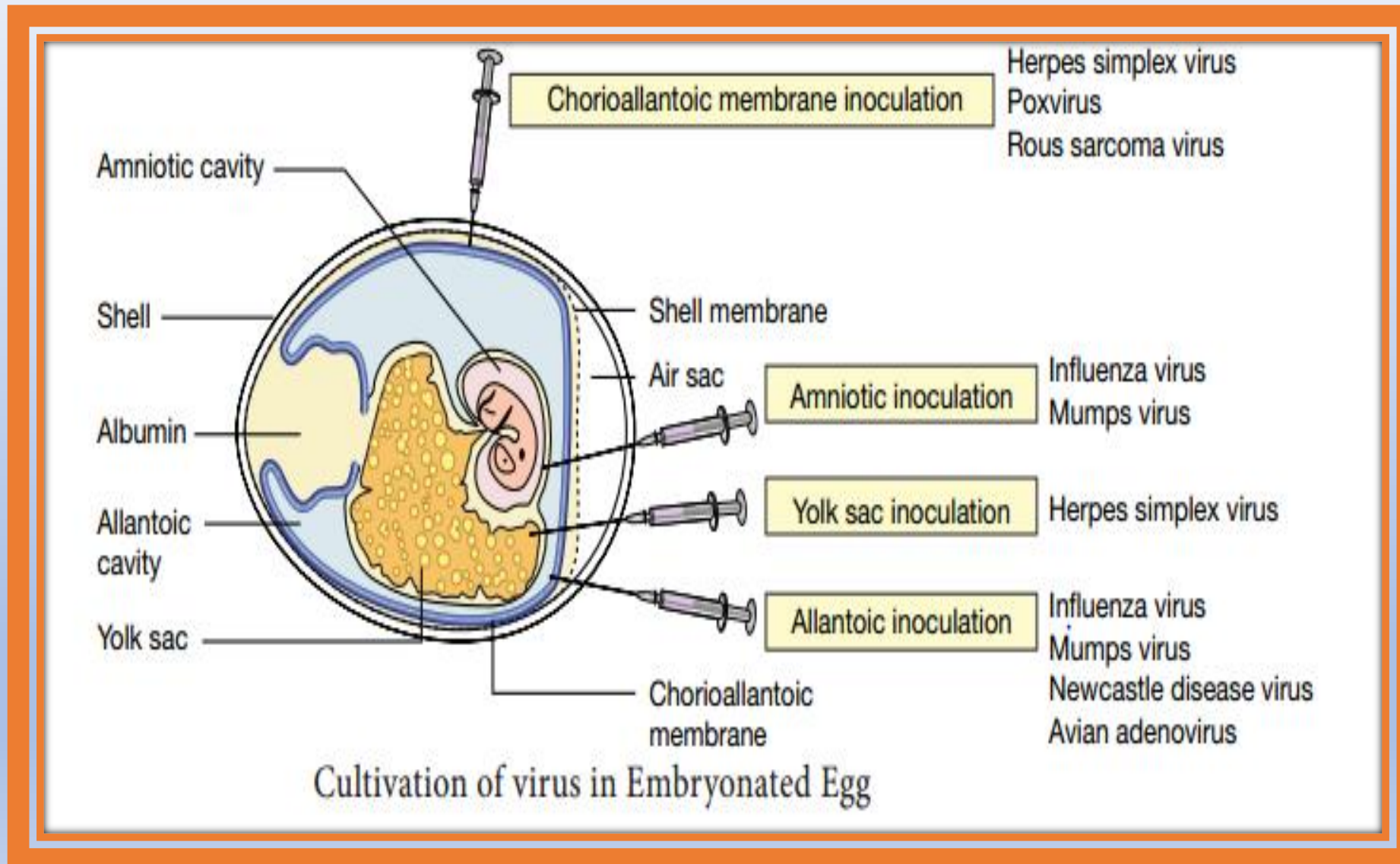
- Inoculation time is 7 days.
- It is also a simplest method for growth and multiplication of virus.
- This method used for cultivation of some viruses such as Paramyxo virus.

3. Chorioallantoic Membrane (CAM):

- The time of inoculation in this part is 10-13 days
- Used mainly for Pox virus and Herpes virus
- After incubation , visible lesions called pocks are observed, which is grey white area in transparent CAM.

Embryonated Egg





Advantages of using embryonated eggs :

- 1- The space required for embryonated eggs is less than using of lab animals
- 2-No need for cleaning such as that used with cages of lab animals so in general required less laboring.
- 3-Easily labeled and identified
- 4-Embryonated eggs are considered such a good source to produce varieties of vaccines

Disadvantages of using embryonated eggs :

- 1-It is NOT easy to cultivated the virus.
- 2-Can NOT be seen or examine under the light microscope.
- 3- Each virus have their own site of inoculation which required different techniques and condition for their growth.

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