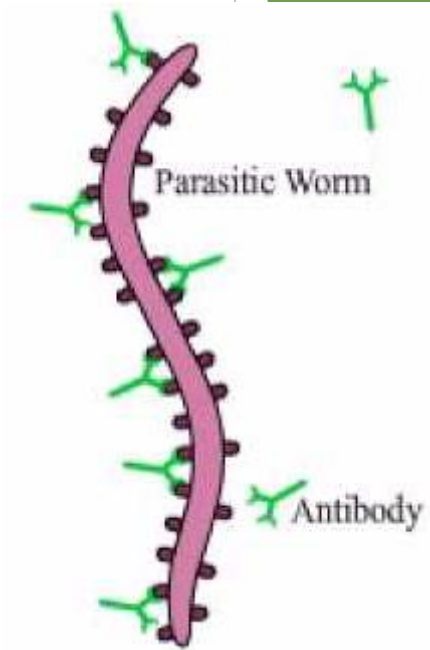
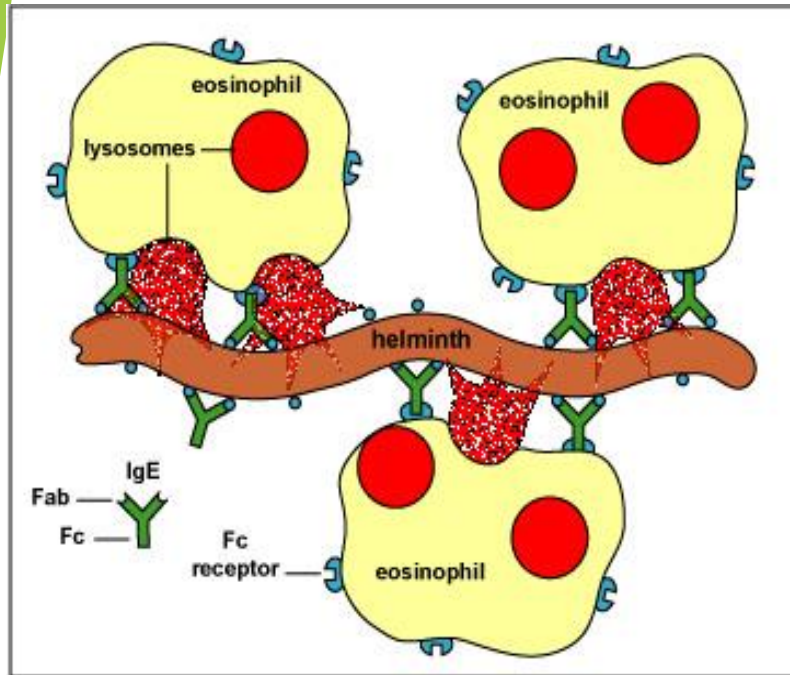




# Immunity against Parasitic Infections/Infestations



**Dr. AJIT KUMAR**

**Department of Veterinary Parasitology**

**Bihar Veterinary College**

**Bihar Animal Sciences University**

**Patna-800014**

# Immunity Against Parasitic Infections/ Infestations

## Infection:

Usually used to denote internal parasite infections.

e.g. *Fasciola hepatica* infection

*Ascaridia galli* infection

# **Immunity Against Parasitic Infections/ Infestation**

## **Infestation:**

Usually used to denote parasitism by the external parasite .

**e.g. Mite infestation**

**Tick infestation**

**lice infestation**

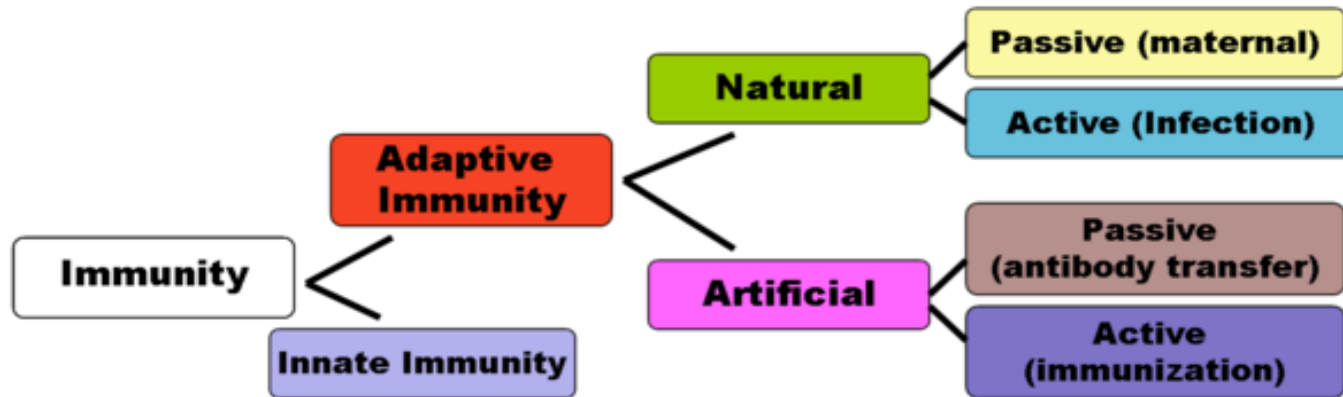
# **Immunity Against Parasitic Infections/ Infestations**

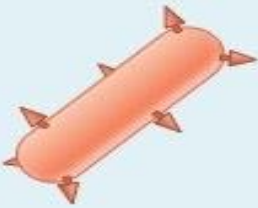


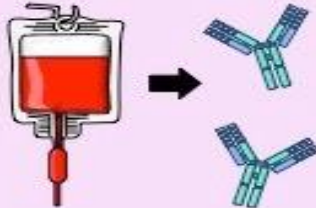
## **Immunity:**

**Capability of host to protect himself against the entry or invasion of organisms or parasites.**

# Immunity Against Parasitic Infections/ Infestations

## Classification of immunity :-



ACTIVE IMMUNITY		PASSIVE IMMUNITY	
Natural	Artificial	Natural	Artificial
 <p>Infection</p>	 <p>Vaccination</p>	 <p>Maternal antibodies</p>	 <p>Monoclonal antibodies</p>

# Immunity Against Parasitic Infections/ Infestations

## **Innate immunity-**

- Naturally acquired immunity present in the body.
- It provides first line of defence from infection in a non-specific manner.
- It is of non-immunological or immunological in origin.

# Innate Immunity

- **Non-immunological origin -**

  - Host resistance:**

    - **Parasites can not develop in the hosts other than their usual hosts.**

      - e.g. *Toxocara canis* found in dog but not found in cattle .**

# Innate Immunity

- **Non-immunological origin**

## Age resistance:

- ✓ Generally adult animals are resistance to parasitic infections in comparison to young.

e.g. *Toxocara vitulorum* infection mostly found in buffalo calves

*Eimeria* spp. ( Coccidian parasites) are mostly affect chicks.

- ✓ But in some parasitic infections, the young animals are resistant while the adults are susceptible.

e.g. *Babesia* and *Anaplasma* infection mostly occurs in adults.



# Innate Immunity

- **Non-immunological origin**

  - Breed resistance:**

    - **Desi breed are more resistant to certain parasitic infections in comparison to other breeds**

      - e.g. N' dama cattle ( West African humpless cattle) is resistant to *Trypanosoma* infections. Hence k/a Trypanotolerant breed.**

        - Desi cattle ( *Bos indicus*) is usually resistant to tick infestation.**

# Innate Immunity

- **Non-immunological origin -**

**Geographical distribution:**

- *Trypanosoma cruzi* infection is not found in India due to non-availability of Vector ( Triatomid bugs).

# Innate Immunity

- **Non-immunological origin -**

## **Natural barriers:**

**Saliva, tears, mucus, skin and mucous membrane act as natural barriers because it prevent parasitic infections.**

# Innate Immunity

## ○ Non-immunological origin -

### Feeding habit:

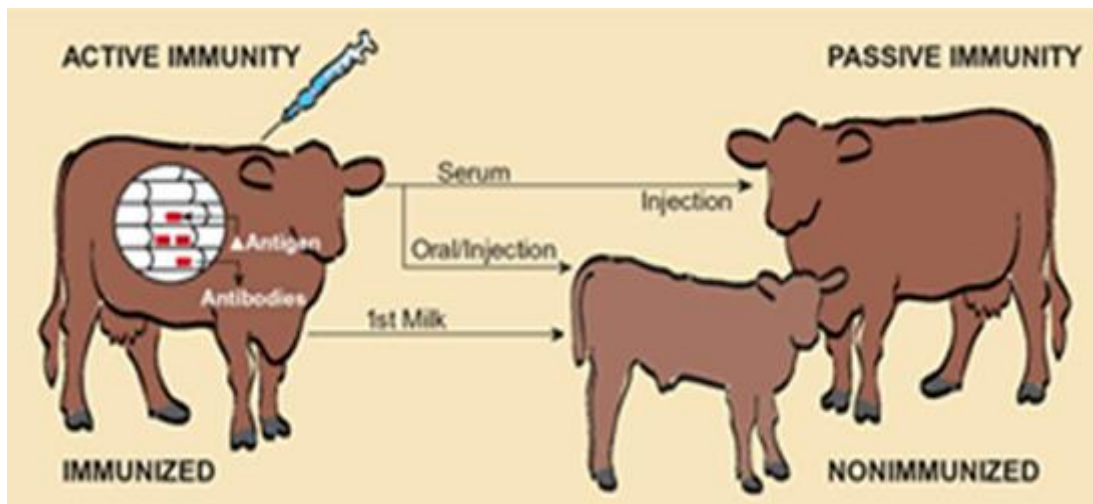
- Amphistome infections do not occur in dogs because of carnivorous habit.
- Ruminates do not feed fish so *Opisthorchis sinensis* infection not found in ruminates.

# Immunity against parasitic infections/infestations

- ▶ **Acquired immunity-** It is acquired by animal as a result of previous exposure of parasitic infection or by artificial means (vaccination etc.). It is two types-

(a) **Active immunity**

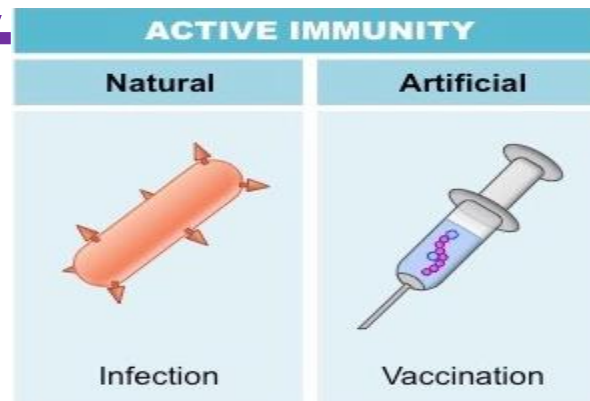
(b) **Passive immunity**



# Immunity against parasitic infections/infestations

**(a) Active immunity** – It is long duration immunity which occurs as a result of the administration of live infection (an antigen) or dead culture or culture filtrate.

**e.g. Premunity, sterile immunity and autoimmunity are the examples of active immunity.**



# Immunity against parasitic Infections/infestations

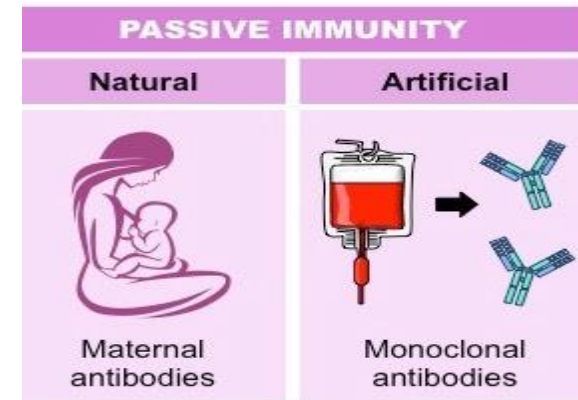
(b) **Passive immunity-** It is short time immunity occurs due to passive transfer of immunity i.e. readymade antibodies from the immunized animal to unimmunised.

# Immunity against parasitic infections/infestations

## (b) **Passive immunity-**

**e.g. Foetus in the womb of mother and also new born receive immunity through colostrums or milk.**

**Serum of hyperimmune animal is injected to a healthy animal for immunization. e.g. Antitetanus serum (ATS) contains readymade globulin against tetanus causing bacteria.**





# **Immunity against parasitic infections/infestations**

## **Humoral immunity :-**

- **It is antibody mediated immunity in which B-lymphocytes play major role.**
  - **T- helper cells (Th1 &Th2) have also play role in this immunity.**
- e.g. Haemoprotozoan infections.**

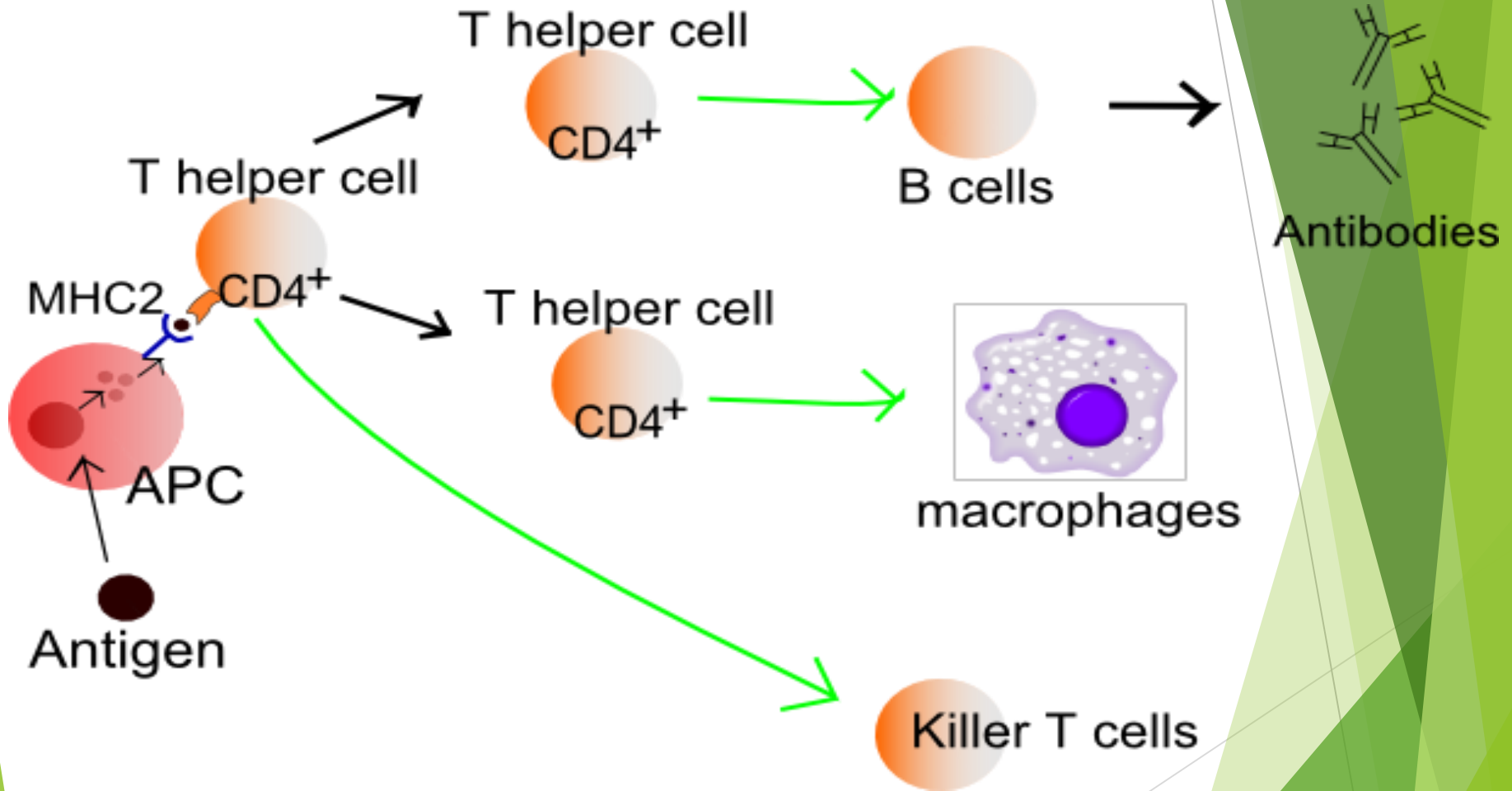
# **Immunity against parasitic infections/infestation**

## **Humoral immunity:-**

**Antibodies (Abs) act in any of the following ways-**

- I. Abs bind to the epitopes of the antigens (Ags) resulting in neutralization of parasites.**
- II. Abs cover certain sites on the surface of parasite which results inhibition of penetration to the host cells as well as feed intake.**
- III. Abs cause lysis of parasites in presence of complement.**
- IV. Abs help to induce Type-I hypersensitivity reaction**

# Mechanism of Immune system



THANK U