The immune system in chickens:

**Immunity:**

Resistance or protection against a particular disease or infection.

**Active or acquired Immunity:**

This type of immunity induced through response to infection with a pathogen or through vaccination. Response is to a specific antigen using humoral (B lymphocytes) and cell-mediated (T lymphocytes) and includes memory development to that antigen.

**Innate Immunity:**

It's mean the Immunity that is a rapidly induced broad response to infectious microbes using phylogenetically encoded receptors (pattern recognition receptors).

**Passive Immunity:**

The immunity that occurs without infection or vaccination. One source of passive immunity is maternal antibodies passed through the egg to the chick.

**The immune system for chicken composed of from two types:**

1. Specific immune systems consist of two types:

**A) Primary immune systems:**

1- Cellular immune response:

The cells which responsible for this type called T cells which produced from thymus glands under thymobiotine effect. Found 4 types from these cells are:

a) Helper T cells.

b) Cytotoxic T cells.

c) Memory T cells.

d) Superior or suppresser T cells.
Functions of cellular immune response:
1- Helper T cells secreted the cytokines which responsible for stimulation B cells to maturation in to plasma cells to produce antibodies. Also these cytokines responsible for activation of cytotoxic T cells to produce lymphotoxin which have antitumor activity.
2- Produce lymphokinaes which responsible for activate mono nuclear phagocytic.
3- Produce the interferon's : Its small protein materials which responsible for viral destroyed.
4- The helper T cells surface characterized by content CD4 but cytotoxic T cells content CD8.
   *CD: Clusters Differentiation.
5- The cytotoxic T cells responsible for secretion of interleukins which help in antigens (bacteria and virus) destroyed.

2- Humoral immune response:
   The cells which responsible for this response called B cells which produce antibodies(immunoglobulin's) these cells secreted from bursa of fabrisia under bursobiotine affect. Found 3 principle Igs classes in chickens are:

1. IgM:
   a) Is initial Ig expressed on the B cells surface.
   b) Usually produce following primary immunization.
   c) Its produce by plasma cells in the spleen, lymph nodes and bone marrow.
   d) It have important function for activate and complement fixation because it have 5 heads, therefore it largest isotype of Igs.

2. IgA:
   a) Is the major isotype of chickens Igs which found in bile, mucous, saliva, milk and tear.
   b) It's may have tetrameric or diemeric forms and content secretory region which responsible for Ig protection against lytic enzymes.
3. **IgG:**
   a) In chickens called IgY.
   b) It’s secreted by plasma cells in the spleen, lymph nodes and bone marrow.
   c) It’s secreted after IgM and found in highest concentration in the serum.
   d) Because it’s smallest Igs, therefore it escape from blood vessels more easily.
   e) It’s transferred from hen to embryo by egg yolk.

**B) The 2ndary immune systems:**
   Its composed of from: Spleen, Cecal tonsil, Bayer peaches and Hardirian glands.

2. **Non Specific immune systems consist of:**
   Heat, skin, respiratory tract cilia, microflora and feathers.