

IMMUONHAEMATOLOGY

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Introduction:

Immunology:

It is branch of biomedical science deals with study of resistance to infection and rejection to foreign particles.

Immunohaematology:

It is branch of haematology that deals with study of antigen antibody reactions, and analogous phenomena as they relate to pathogenesis and clinical manifestation of blood disorders.

CONT:

- **Antigens :**

Ags are muco polysacharide molecules present on the circulation leading to stimulation of Abs.

- **Antibodies:**

Abs glycoprotein, produced by B. lymphocyte or plasma cells as responsible to exposure to forein Ags.

Types of Antibodies

● According to the heavy chain :-

1- IgG or γ

2- IgM or μ

3- IgE or ϵ

4- IgA or α

5- IgD

CONC

⦿ According to the foreign of stimulus:

1- Auto antibody:-

Ab that produced against the Ag of an individual red cells.

2- Allo antibody:-

Production of Abs against the Ag form same species blood transfusion.

3- Hetro antibody:-(iso)

Production of Ab against antigen from another species.

Structure Of Basic Unit Ab

- ◉ Composed of two pairs of chain Known as light and heavy chain.
- ◉ Light chain 200 a.a .
- ◉ The first 110- 120 a.a of both form a region Known as variable region that gives the specify of molecule and throw which the Ab bind the Ag.
- ◉ **Paratope**: an actual area in variable region of Ab molecule that specifically bind with an area in Ag known as **epitope**.

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- Heavy Chain :according to Ab structure (IgG) monomeric ,400 a.a.
- **Fab**: Fragment antibody binding throw through which Ab binding Ag.
- **Fc**: fragment cristalizable :- activate complement and phagocyte adherence.

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- **IgG:** monomeric, composed of only one basic structural only one unit.
- **IgM:** Bntameric composed from basic structure.

Characteristics of IgM and IgG

Characteristics	IgG	IgM
Heavy chain	γ	μ
Light chain	k or L	k or L
Structural formation	γ_2 or k_2 or	
Molecule weight	150 kD	900 kD
Serum conc /dl	80% 1250mg/dl	120 mg /dl
Usual serological behaviors	In complete Ab, that fail to Agg RBCs that suspend in N.S	In complete Ab, that can to Agg RBCs that suspend in N.S
Optimum temp	37° Worm Abs	4° - 20°c cold Abs
Crossing on the placenta	Can cross	can not
complement fixation	yes	yes
56°c heating for 10 min	Not affect	affect

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charecteristic	IgG	IgM
Usual antigenic stimulus	Immune Ab	Natural occaring
Treatment of 2 mercapto eithanol	Not Affect	affect

Essential of molecule to be antigenic:

- ◉ Forgeiness .
- ◉ High molecule.
- ◉ Antigenicity.
- ◉ Chemical structure of molecules.
- ◉ The rote of administration.

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