



2.5.1: Sample Assignment

DR. B. C. ROY COLLEGE OF PHARMACY & AHS,
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ASSIGNMENT

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TOPIC: *Compare various types of immunoglobulin.*

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Compare various types of immunoglobulin.

Immunoglobulin or antibodies are glycoproteins released by plasma cells B-lymphocytes released against antigen or immunogen and function as antibodies

- Antigen present in foreign are protein molecules. responsible for producing specific antibody or anti-immunoglobulin for specific function.

▣ Various types of immunoglobulin produced are :-

<u>Name of the immunoglobulin</u>	<u>Nature of Heavy chain</u>
Ig G immunoglobulin	Gamma (γ) chain
Ig A immunoglobulin	Alpha (α) chain
Ig M immunoglobulin	Mu (μ) chain
Ig D immunoglobulin	Delta (δ) chain
Ig E immunoglobulin	Epsilon (ϵ) chain

▣ Comparison of immunoglobulin :-

<u>Antibody isotype</u>	<u>Heavy chain</u>	<u>Light chain</u>	<u>Subunit composition</u>	<u>Location</u>	<u>Molecular weight</u>
Ig G	Gamma chain	kappa or lambda	Monomer (H_2L_2)	Serum	150,000
Ig A	Alpha chain	kappa or lambda	Dimer (H_2L_2) ₂	Serum + Mucosal Lumen	160,000
Ig M	Mu chain	kappa or lambda	Pentamer (H_2L_2) ₅	Serum	900,000
Ig D	Delta chain	kappa or lambda	Monomer (H_2L_2)	Surface of B cells	185,000
Ig E	Epsilon chain	kappa or lambda	Monomer (H_2L_2)	Serum + Mast cell surface	200,000



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☐ Comparison based on properties, abundance :-

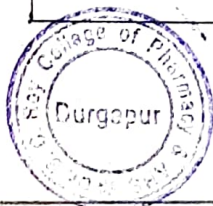
- ☐ IgG :-
- most versatile immunoglobulin capable of carrying all the functions of immunoglobulin
 - About 75% of the abundance total.
 - only immunoglobulin that can cross placenta.
 - Half life of serum is 23 days.

- ☐ Properties :-
- 1) It can cross the placenta
 - 2) It neutralises the toxins.
 - 3) Binds to phagocytes
 - 4) Main blood.
 - 5) Percentage of total serum antibody is 80%

- ☐ IgA :-
- Present in 15% the total abundance.
 - Responsible for primary defence mechanism
 - secretory ^{membrane} supports IgA to cross across the mucous membrane.
 - Half life of serum is 6 days.

- ☐ Properties :-
- 1) Percentage of total serum antibody 10-15%
 - 2) Second most common immunoglobulin
 - 3) mainly present in body secretion against toxins
 - 4) Not responsible for fixation of complements.

- ☐ IgM :-
- It is the only pentamer.
 - Half ~~life~~ life in serum is 5 days.
 - present in serum & lymph
 - ~~not~~ effective in fixation of complements.
 - Location is B-cell surface, blood, lymph.



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□ Properties :- 1) binds to the site of Fc receptors.

- a) also good agglutinating agent
- b) effective in binding to the complement
- d) Half life in serum is 3 days.

□ IgD :-

- a) exist in monomeric form
- b) Formed in serum or lymphocytes
- c) shows activity against certain antigen like milk, protein

□ Properties :-

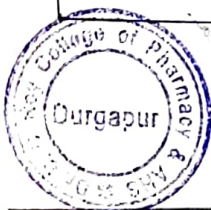
- a) Present in serum in low concentration.
- b) Half life of serum is 3 days.
- c) doesn't bind to complement.
- d) Present on B cell surface.

□ IgE :- a) actively takes part in allergic rxn

- b) Found in serum
- c) Found in monomeric form

□ Properties :-

- a) Doesn't fix the complement
- b) Found in serum in low concentration
- c) Involves in ~~the~~ control of helminthic disease.



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