

Immunoglobulin A (IgA)

It is Y-shaped immunoglobulin. It has a typical immunoglobulin structure. It is made up of two light chains and two heavy chains. The light chains are of kappa (κ) or lambda (λ) type and the two heavy chain of alpha (α) type.

The light chain consists of two domains, a single constant domain (C_L) and a single variable domain (V_L).

The heavy chain consists of 4 domains, a single variable domain (V_H) and three constant domains (C_H1, C_H2, C_H3). IgA play important role in mucosal immunity.

IgA is found in mucous secretions including tear, saliva, clostrum. It is also found in the secretion of the genital tract, vagina, urinary tract, gastrointestinal tract, prostate respiratory epithelium. In blood it is found in small amount.

About 3 to 5 gms of IgA are secreted into the intestinal lumen every day. This accumulates 75% of total immunoglobulin produced in the entire body.

Two subclasses of IgA exist namely IgA1 and IgA2.

IgA1 has both interchain and intrachain disulphide linkages. IgA2 is completely devoid of interchain disulphide bonding between the heavy and light chains. Instead the two chains are linked by non-covalent.

It is two types —

i) Serum IgA

ii) Secretory IgA.

i) Serum IgA :

Serum IgA is monomer having a structure like IgG molecule. It is made up of 2 light and 2 heavy chains. The light chains are λ type or κ type. The heavy chain is α -type.

The chain of IgA differ from the γ (gamma) chain of IgG in having a greater carbohydrate content and in the amino acid sequences. Its molecular weight is 1,60,000. Its sedimentation coefficient is 7S. The normal serum level of IgA is 0.6 - 4.2 mg/mL. It has half life of 6-8 days.

ii) Secretory IgA :

It occurs as dimer. It is formed of two molecules of IgA linked by a secretory component (Sc) and J-chain (Joining Chain).