Antigen

Antigen : It is a material of different chemical nature have the ability to stimulate the immune system in the body and called Immunogens which leads to the generation of antibodies to the quality of his work to resist antigen .

Antigen has a range of the antigenic determinants called epitopes , the part of which combine with the antigen antibody specific to him.

Characters of antigen :

1 - Molecular weight : You must antigen with a molecular weight high where it was found that the material has a molecular weight less than 10,000 Daltons not be well antigens, there are some cases such as viruses be The molecular weight of a small but complex structure Doing so can stimulates the immune system , in addition to the presence of substances with high molecular weights do not stimulate the immune system because it is not foreign of the body.

2 - The molecular complexity : You must antigen good complex in terms of the and structure is not enough that the antigen with a molecular weight shape high to be antigen good as the sugars multiple and heterogeneous not be antigen strong but proteins with a low molecular weight be good antigens and often consist of 20 - 18 different amino acid .

3 - Solubility :the good antigen which possess higher solubility and causes stimulation larger antibody generation .

4 - strange : where the substance or antigen strange about the components of the body itself and the more strange the stronger immune stimulation .

Factors that lead to increased generation of antibodies :

1 - The antigen dose and repeated it lead to increased generation of antibodies

2 - injection method: must antigen enters the body to stimulate an immune response , but the best and fastest way is by intravenous injection while entering through the digestive system may be destroyed.

3 - Antigens interference : there are more than lead to increased antibody generation .

4 - Genetic factors : the immune response different one person to another

Bacterial antigens :

1- Somatic antigens(O-Ag) : Represents germ cell wall and consisting of polysaccharide and proteins or Ticquik acid in the G+ bacteria in addition to lipopolysaccharides.

2- Flagella antigens (H-Ag): There is in the flagella bacteria animation , which is a protein composition.

3- Capsular antigens (K-Ag): Exist in some bacteria which possess capsule and consisting of polysaccharide or polypeptide .

4- Toxic antigens(Vi-A): There are bacteria that produce toxins and usually consisting of proteins.

Haptens: (Weak antigen)

An antigen is characterized by low molecular weight so can not stimulate the immune system or stimulate it but weakly, so for this types of antigens uses other materials mixed with it to increase the molecular weight and then stimulate the immune response strongly against this antigen and called these materials Adjuvant.

Adjuvant: is a material mixed with Haptens and injected into the body to increase the immune response and of increasing the amount of antibodies.

Adjuvant types :

1 - Complete freund adjuvant: consists of lipid mixed with heat TB bacteria (Mycobacterium tuberculosis) mixes this with antigen and injected into the animal 's body to increase the amount of antibodies, and not inject this kind of adjuvant in humans because it causes tumors .

2 - Incomplete freund adjuvant: consists only of lipid mixed with antigen and injected into the body

3 - metallic Adjuvant : contain aluminum salts , calcium silicate and used these salts with antigens in humans more than others.

Adjuvant function:

1 - fixing antigen injection for a long time and thus be in contact with immune system and increase the amount of antibodies in the body.

2 - stimulates lymphocyte membrane to form a large number of antibodies , where a direct impact on those cells.

3 - some of it consume by phagocytic cells that transmit to the lymph nodes and be in contact directly with lymphoid cells and increase the generation of antibodies .