
Antibodies as a part of the immune system

The blood is a disperse system consisting of blood cells suspended in the blood serum. The blood serum makes up the fluid part of the system. It consists of 91% water, 8% protein, including antibodies, and 1% salts. The blood cells which are making up the solid part of the system, consisting of three types of cells; red blood cells, containing antigens on the outer surface, white blood cells which are important in the immune system, and blood plates functioning in coagulation.

Antibodies are made as a part of the immune system, and its function is to inactivate foreign substances by binding to its antigens. This is an important mechanism to get rid of potentially harmful substances. There are several types of antibodies and antigens. The type of antigens the blood has, determine its blood type according to the ABO-system. In a successful blood type match, the antigens do not bind to the antibodies. If wrong antibodies are mixed with the antigens, they will bind to each other in a reaction called agglutination. The antibodies attack the red blood cells because its antigens are seen as foreign. This is seen by clumping of the blood and is very dangerous for humans. It is therefore very important in blood transplantations to use the same blood type as the patient.

The specialized white blood cells, b- lymphocytes, produce the antibodies. Antibodies are together with B cells one of the most important functions in immunity Antigen is importing for stimulating an immune response, that is activated by the lymphocytes and makes the lymphocytes. This immune response that stimulates the lymphocytes makes the lymphocytes produce antibodies or attack the antigen directly Red blood cells react differently with different types of antigens. A red blood cell type A has A antigens around the surface of the cell. They need an antibody from Anti-B to react with them. Blood cell type B has B-antigen and type B's antibody is A. Blood cell type AB has both A and B antigens and therefore has none antibodies to bind to. The blood cell type 0 has none antigens and has, therefore, both antibodies A and B. If we take type A, as an example, and add it to antibody-A an agglutination will happen. That is because of the antigens around the cell don't bind to antibody-A. The same will happen if other blood cells are added to the wrong antibody.

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