7. Immune Response

The reaction of an organism to a foreign substance is called ***immune response.***

The ultimate aim of the immune response is to inactivate, destroy and eliminate the antigen from the body of the organism.

The response is mainly of two types. They are ***humoral immune response*** and ***cell mediated immune response.***

In humoral immune response, the body fights against the antigen by producing ***antibodies.*** This immunity is called the ***humoral immunity*** or ***antibody mediated immunity***.

In cell-mediated immune response, the body produces a large number of ***activated lymphocytes*** that are specially designed to destroy the foreign substances; hence the immunity is called ***cellular immunity*** or ***cell mediated immunity.***

Humoral Immune Response (Antibody mediated immune Response)

The destruction of antigens by producing antibodies is called ***antibody mediated immune response.*** As antibodies are present in the body fluids ***(humors)***, it is also called ***humoral immune response.***

Antibodies will react with antigens (pathogens) present outside the cells. They cannot kill the pathogens present inside the cells.

Humoral immunity kills and neutralises the bacterial antigens and their toxins.

Humoral immune response is brought about by B cells. Hence it is also called ***B cells mediated immunity***. As the B

cells are involved in antibody production, they are called ***effector cells*** for humoral immune response.

The B cells alone cannot bring about humoral immune response. They need the co-operation of some other cells such as ***macrophages, T helper cells (T_H cells)*** and ***dendritic cells.***

The immune response produced by the entry of the antigen for the first time is called ***primary immune response.*** The first injection of the antigen producing primary immune response is called ***priming dose.***

If the same animal is given the same antigen for the second time, the animal produces an immune response for the second time called ***secondary immune response.*** The injection of the same antigen for the second time is called ***secondary dose*** or ***booster dose.***

The humoral immune response results in the production of antibodies in the blood plasma. The amount of antibodies produced by the immune response is called ***antibody titre***. The antibody titre plotted against time gives a sigmoid curve called ***immune response curve.***

The curve obtained for primary immune response is called ***primary immune response curve*** and that obtained for secondary immune response is called ***secondary immune response curve.*** The immune response curve is a typical ***sigmoid curve***. The curve has four phases, namely ***lag phases, log phase, plateau phase***, and ***decline phase***.

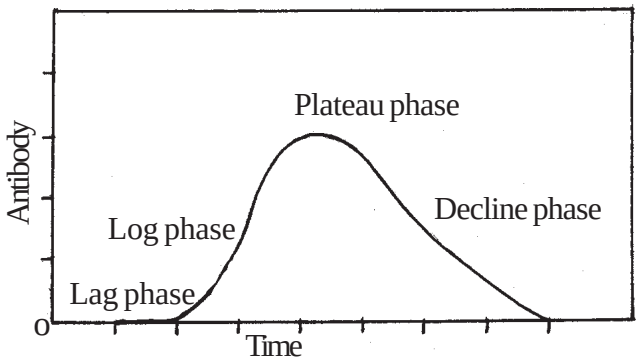

Fig.7.1: Primary immune response.