**ASSIGNMENT ON IMMUNOLOGICAL SYSTEM**

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**TO BE SUBMITTED TO DR OLUWASEYI OYEDELE AKPOR**

1. EXPLAIN THE ROLE OF THE IMMUNE SYSTEM

ANSWER; The basic role of the immune system is to remove foreign antigens such as virus and bacteria to maintain homeostasis such that when an organism is threatened by microorganism, viruses or cancer cells, the immune system acts to provide protection through two parts which include;

* The first part is through specific defense mechanism i.e. antibody-antigen reaction. Once the body immune system has built an antibody for a specific antigen, the immune system will respond faster that if they had been no previous exposure to the antigen (i.e. the body is immune to the pathogen, but only that specific pathogen, because the immune system responds faster).
* The second part is the non-specific part of the immune system that is mostly composed of phagocytosis (eating-cells) which engulf and digest foreign substances like bacteria and viruses, which do not bear the body’s specific identities.
1. DESCRIBE THE TWO TYPES OF IMMUNITY

ANSWER: they are mainly to types of immunity which include;

1. **Natural immunity**; this immunity also known as innate which is non-specific that is it lacks specific response to specific invaders. It is inherited by the organism from the parents and protects it from birth throughout life and it provides a broad spectrum of defense against and resistance against infection.

Natural immunity co-ordinates the initial response to pathogen through the production of cytokines and other effector molecules, which either activate cell for the control of the pathogen (by elimination) or promote the development of the acquired immune response; the cells involved in this response are Monocytes, macrophages, dendritic cells, natural killer (NK) cells, basophiles, eosinophils and granulocytes. Natural immune mechanism can be divided into two stages which are

* Immediate (generally occurring within 4 hours)
* Delayed (occurring between 4 and 96 hours after exposure)

Natural immune system consist of four types of barriers which helps to prevent infection;

* Physical barrier.
* Physiological barrier.
* Cellular barrier.
* Cytokine barrier.
1. **Acquired immunity**; it is also known as adaptive immunity that an individual acquires after birth. It is specific such that this form of immunity relies on the recognition of specific foreign antigen and mediated by antibodies or lymphocytes or both which make the antigen harmless. It usually develops as a result of prior exposure to an antigen through immunization (vaccination) or by contracting a disease, both of which generate a protective immune response.

The acquired immune response is broadly divided into two mechanism;

* The cell mediated response, involving T cell activation.
* Effector mechanism, involving B-cell maturation and production of antibodies.

The acquired immunity has two types;

* Active acquired immunity; refers to immunologic defenses developed by the person’s own body. This immunity typically last many years or even a life time.
* Passive acquired immunity; is temporary immunity transmitted from a source outside the body that has developed immunity through previous diseases or immunization.

The active and passive acquired immunity involves humoral and cellular (cell mediated) immunologic response and they are strongly interrelated.

1. Explain the different types of antibodies

ANSWER; there are 5 types of antibodies and they are categorized or have a specific alphabet attached to them and they are called immunoglobin.

* IgG; it appears in serum and tissues (intestinal fluid) and it constitutes 75% of total immunoglobin. It role is to protect against bacteria, viruses, neutralize bacterial toxins, trigger, compliment protein system and bind antigen to enhance the effectiveness of phagocytosis.
* IgA; it constitute 15% of total immunoglobin which appears in the body fluids (blood, saliva, tears, breast milk, and pulmonary, gastrointestinal, prostatic and vaginal secretions). It role is to bind antigen on microbes before they invade tissues. It aggregates the antigen and keeps them in the secretions so when the secretions is expelled, so as the antigen, and it also protects against respiratory, gastrointestinal, and genitourinary infection.
* IgM; it constitutes 10% of total immunoglobin which appears mostly in intravascular serum and appears as the first immunoglobin produced in response to bacterial and viral infection. It role is to enhance ingestion of cells by phagocytosis and is involved in the ABO blood group antigens on the surface of RBCs.
* IgD; it constitute 0.2% of total immunoglobin which appears in small amount in serum. And is also present on the surface of B-cells which plays a role in the induction of antibody production.
* IgE; it constitute 0.04% total immunoglobin which appears in serum, which takes part in allergic and some hypersensitivity reactions. It plays a role in binding to mast cells and basophils which participate in the immune response and it also combats parasitic infections.