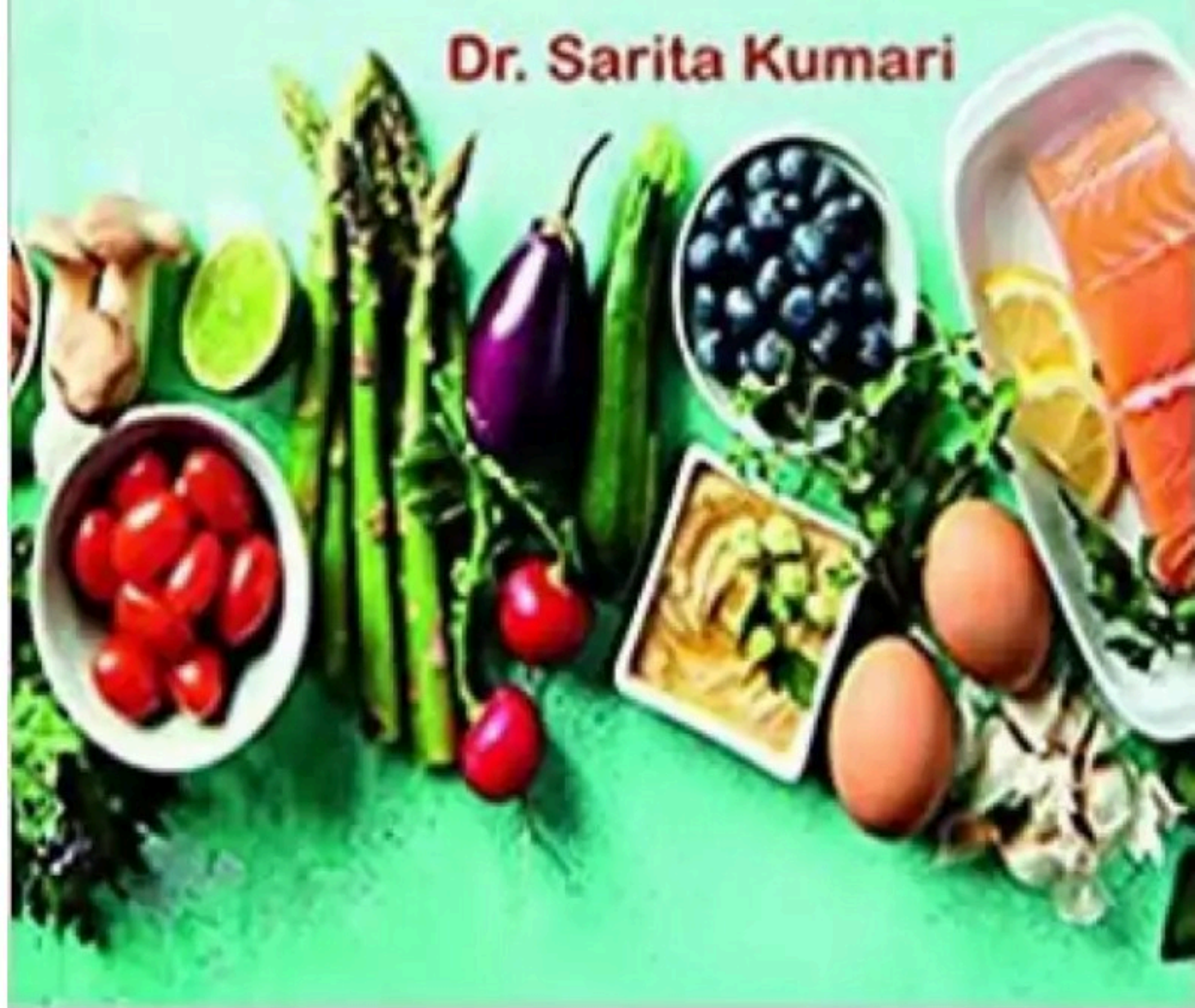


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NUTRITION AND IMMUNE SYSTEM

Dr. Sarita Kumari



Nutrition and Immune System

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Nutrition and Immune System

By Dr. Sarita Kumari

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2.

Immunity: Protective Biological Shield

Dr. Kusum Kumari*

The body protects itself from disease by physical barrier skin and mucous membrane. Systemic immunity means when specialized cells respond to attack of bacteria, virus and fungus. Cells involved in the immune system are located throughout the body. Some are in fixed tissues like - thymus, lymph nodes, marrow, spleen, lymphoid tissues of the respiratory, gastrointestinal, genitourinary tract, Kupffer cells of the liver and peyer's patches of the small intestine. Others such as lymphocytes and leukocytes are mobile released in blood and carried to the place where they are needed.

The immune response involves interaction of multiple cell types. Systemic immune response are

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classified as non specific and specific.

Non-specific immune response is generalized defensive response. Two types of leukocyte, polymorphonuclear leukocytes and monocytes are involved they circulate freely in blood and function as phagocytes.

The human body has the ability to resist all organisms or toxins that tend to damage the tissue or organs that are called immunity. Immunity resulting from general process is innate immunity, It includes phagocytosis of microorganisms by WBC, destruction by acid secretion digestive enzymes. Resistance of skin some chemicals in blood lysozyme polypeptides natural killer lymphocytes.

A person is said to be immune when we possess specific protective antibodies or cellular immunity due to previous infection or immunization or is so conditioned as to respond adequately to prevent infection or clinical illness after exposure to a specific infections agent.

There are two types of specific immunity. This type of immunity is called acquired immunity.

Acquired immunity is the product of the body's lymphocytes, lymphoid tissues such as spleen, GI tract and bone marrow. Lymphoid tissue distributed involves body to interrupt for invading microorganisms or toxins.

Lymphocytes processed in the thymus or T-lymphocytes B lymphocytes are processed into the liver during mid-foetal life and in the bone in late foetal life and after birth.

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Specific defence is of two type-

Active Immunity

- Humoral Immunity or B-cell Immunity.
- Cellular Immunity or T-cell Immunity.
- Combination of Both.

Passive Immunity

- Normal Human Ig
- Specific Human Ig
- Animal Antitoxins or Antisera

Active Immunity- It is an immunity which an individual develops after infection or immunization. Antibodies act on microorganism concerned with disease.

Active Immunity depends upon the humoral and cellular responses of the host.

Active Immunity may be acquired by three ways-

- Clinical infection
- Subclinical or
- Inapparent infection,

immunization with an antigen which may be killed vaccine, a live attenuated vaccine or toxoid.

Types of Active Immunity

Humoral Immunity or B-cell Immunity

This immunity comes from B-cells (Bone marrow derived lymphocytes) which manufacture specific circulating antibodies or immunoglobulin (Ig) which directly reacts with antigen. These immunoglobulins are five types - IgG, IgM, IgA, IgD, IgE.

These antibodies circulate in the body & neutralize the toxins or microorganism.

Cellular Immunity or T-cell Immunity

It provides resistance to infection cellular immunity mediated by T-cell which helps B-lymphocytes. T-cells do not secrete antibodies responsible for recognition of antigen.

Combination of Both

B and T lymphoid cells co-operate with one another and their joint function constitutes the complex event of immunity. For a vaccine being more effective it should possess both humoral and cell-mediated responses.

Passive Immunity

When antibodies produced in one body (human or animal) are transferred to another to protect against disease is known as passive immunity. e.g. Human milk also contains protective antibodies (IgA)

Herd Immunity

Herd immunity means group protection that is afforded by the protection of immunized individuals.

Conclusion

The immune response involves interaction of multiple cell types. A specific defense is of two types.

Active Immunity- Active immunity depends upon humoral and cellular responses of the host.

- 1. Humoral Immunity or B-cell Immunity-** B-cells manufacture circulating antibodies or immunoglobulin-IgG, IgM, IgA, IgD, IgE. These antibodies circulate in the body & neutralize that toxin or microorganisms.
- 2. Cellular Immunity or T-cell Immunity-** T-cell helps B-lymphocytes. It does not secrete antibodies but recognizes antigen.
- 3. Combination of Both-** For vaccine being more

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effective. It should possess both humoral cell mediated responses.

Passive Immunity- When antibodies produced in one body are transferred to another to protect against disease it is called passive immunity.

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