



MANGALORE UNIVERSITY
DEPARTMENT OF MICROBIOLOGY
MSc Microbiology

Hard Core

MBH-452: Immunology

56h

OBJECTIVES

1. Study various aspects of immunology such as immunity, immune cells, antigens and antibody.
2. Types of immunity and hypersensitivity studies
3. Study of antigen antibody reaction through **various immunological techniques**.
4. Factors influencing autoimmune diseases and their management.

COURSE OUTCOME

- CO1: Basics of immunology, cells and organs involved
CO2: Immunogenicity, Antigenicity, hypersensitivity
CO3: **Principles and assays of immunological techniques**
CO4: Understanding Immunological aspects of organ grafting.
CO5: **Employment in diagnostic lab.**
CO6: **Identification of pathogens and cancer markers.**
CO7: Understanding of autoimmune diseases.

Unit I:

Immunity, Innate(non-specific) and Adaptive(specific) immunity, primary and secondary lymphoid organs, Cells of the immune system- macrophages, B-cells, T-cells, NK Cells, Basophils, mast cells, hematopoiesis, Humoral or antibody mediated immune response and Cell mediated immune response, receptors of the B-cells, T-cells, monoclonal and polyclonal antibodies.

Unit II:

Immunogenicity, antigenicity, factors that influence immunogenicity, exogenous and endogenous antigens, epitopes, haptens, primary and secondary immune response, antigen processing and presentation, antigen recognition MHC, pattern recognition receptors, Immunoglobulin classes, Immunoglobulin superfamily, secretion of immunoglobulins. Principles and assays of Immunological Techniques: Precipitation, agglutination-hemagglutination, ODD, Radioimmunoassay, ELISA. Western blotting, Immunofluorescence, Flow cytometry, Immuno Fluorescence, Immuno-electronmicroscopy.

Unit III:

Hypersensitivity: IgE-Mediated (Type I) Antibody-Mediated Cytotoxic (Type II) Immune Complex-Mediated (Type III) Type IV or Delayed-Type Hypersensitivity (DTH) Primary and Secondary immunodeficiency, Acquired immunodeficiency syndrome, SCID, X-linked

gammaglobulinemia, Opportunistic infections Cancer induction, Tumors of the Immune System, Tumor Antigens, viral induced antigens, Immune Response to Tumors, Evasion of the Immune System, Immunosurveillance,

Unit IV:

Organ-Specific Autoimmune Diseases, Systemic Autoimmune Diseases, CD4+ T Cell, MHC and TCR in Autoimmunity, Autoimmune Diseases: Hashimoto's thyroiditis, autoimmune anemia, Insulin-dependent diabetes mellitus, Goodpasture's syndrome, Graves' disease, myasthenia gravis, Systemic Lupus Erythematosus, Rheumatoid arthritis, multiple sclerosis Immunologic Basis of Graft Rejection_ Clinical Manifestations of Graft Rejection, Immunosuppressive Therapy, Immune Tolerance to Allografts

Note: Each unit is for 14h

