
Biology Material for:

- **Group I, II, III & IV**
- **SI / PC**
- **SSC**
- **RRB &**
- **Other Competitive Exams...**



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DISEASES

Diseases are of two types. They are

1. INFECTIOUS DISEASE: -The disease which spread from one person to another person is called infectious disease. These are caused by micro organisms like bacteria, virus, fungi etc.
Ex: - AIDS, Cholera, Cold etc.
2. NON INFECTIOUS DISEASE: -The disease which does not spread from one person to another person is called Non infectious disease.
Ex:- Mal nutrition diseases and hormone deficiency diseases etc.

INFECTIOUS DISEASES OR COMMUNICABLE DISEASE

Infectious diseases are caused by micro organisms. Based on the causative organism these are classified into different types. They are

- i. VIRAL DISEASE: - It is caused by virus.
Ex: - AIDS, Hepatitis, polio, cold, rabies, Dengue, swine flu, mumps, measles etc.
- ii. BACTERIAL DISEASE: - It is caused by bacteria.
Ex:-Cholera, Typhoid, Tuberculosis, syphilis, Tetanus, Anthrax, Diphtheria etc.
- iii. FUNGAL DISEASE: - It is caused by fungus.
Ex:-Athlete's foot, ring worm etc.
- iv. PROTOZOAN DISEASE: - It is caused by protozoan parasite.
Ex: - Malaria, Amoebic dysentery etc.
- v. HELMINTH DISEASE: - It is caused by helminth parasite.
Ex: - Filariasis, Teaniasis etc.

Infectious Diseases are classified into five types based the mode of infection. They are

- i. AIR BORNE DISEASE: - The disease which spreads through contaminated air droplets.
Ex: - Tuberculosis, cold etc. (Tuberculosis is a bacterial disease and cold is a viral disease but both the diseases spreads through contaminated air.)
- ii. WATER/FOOD BORNE DISEASE: - The disease which spreads through contaminated water/food.
Ex: - Cholera, Typhoid, Hepatitis-A etc.
- iii. SEXUALLY TRANSMITTED DISEASE (S.T.D):- The disease which spreads through sex or blood. This is also known as blood borne disease.
Ex: - AIDS, Syphilis, gonorrhoea, Hepatitis-B etc.
- iv. VECTOR (or) INSECT BORNE DISEASE: - The disease which spreads through Insect bite.
Ex: - Malaria, Filariasis, Dengue etc.
- v. ZOONOTIC DISEASE: - The disease which spreads through animals other than insects.
Ex: - Rabies, Anthrax etc.

AIDS:-ACQUIRED IMMUNO DEFICIENCY SYNDROME.

Causative organism: Virus

Name of the virus: HIV

Mode of infection:-sexually

Target system: Immune system (W.B.C. especially t-cells)

Diagnostic Test: - ELISA, Western blot and PCR.(ELISA is the screening test and western blot is the confirmatory test.)

There is no vaccine to prevent AIDS but we can extend the life time of the patient by using drugs namely Azidothymidine or Zidovudine.

HIV belongs to retroviridae family.

HIV contains an enzyme called reverse transcriptase.

HEPATITIS-B

Causative organism: Virus

Name of the virus: Hepatitis-B

Mode of infection:-sexually

Target Organ: Liver

Diagnostic Test: - ELISA

Vaccine: - Hepatitis vaccine

SYPHILIS

Causative organism: Bacteria

Name of the Bacteria: - Tryponema pallidum

Mode of infection:-sexually

Target Organ: Sexual organs

Diagnostic Test: - Wassermann test, Kahn test and VDRL

TUBERCULOSIS

Causative organism: Bacteria

Name of the Bacteria: Mycobacterium tuberculosis

Mode of infection:-contaminated air droplets

Target Organ: Lungs

Diagnostic Test: - sputum test, Montoux test

Vaccine: - B.C.G.

DIPHTHERIA

Causative organism: Bacteria

Name of the Bacteria: Corynebacterium diphtheria

Mode of infection:-contaminated air droplets

Target Organ: Throat

Diagnostic Test: - Sheik test

Vaccine: - D.P.T. (Triple vaccine)

COLD

Causative organism: Virus

Name of the virus: Rhino virus

Mode of infection: - contaminated air droplets

Target Organ: Mucus membrane of nose

CHOLERA

Causative organism: Bacteria

Name of the Bacteria: *Vibrio cholera*

Mode of infection: -contaminated water

Clinical symptoms: - Vomiting and diarrhea which leads to dehydration

Treatment: -Oral Rehydration Solution. (ORS is a mixture of salt, sugar and water)

TYPHOID

Causative organism: Bacteria

Name of the Bacteria: *Salmonella typhi*

Mode of infection: -contaminated food, water and milk.

Target Organ: Intestine and stomach

Diagnostic Test: - Widal test

AMOEBIC DYSENTRY

Causative organism: Protozoan parasite

Name of the Protozoan: *Entamoeba histolytica*

Mode of infection: - contaminated water and food

Clinical symptoms: - Presence of mucus and blood in stool

BACILLARY DYSENTRY

Causative organism: Bacteria

Name of the Bacteria: - *E.Coli* and *shigella*

Mode of infection: - contaminated water and food

Clinical symptoms: - Presence of mucus and blood in stool

POLIO

Causative organism: Virus

Name of the virus: Polio myelitis (Enterovirus)

Mode of infection: - contaminated water

Target Organ: Nerve cell

Vaccine: - Polio vaccine (Salk and Sabin)

HEPATITIS-A

Causative organism: Virus

Name of the virus: Hepatitis-A

Mode of infection: - contaminated water
Target Organ: Liver
Diagnostic Test: - ELISA
Vaccine: - Hepatitis vaccine

RABIES

Causative organism: Virus
Name of the virus: - Rabdo virus
Mode of infection: - Dog bite (Zoonotic disease)
Clinical symptoms: - Hydrophobia
Diagnostic Test: - Atopsy
Vaccine: - Rabies vaccine

ANTHRAX

Causative organism: Bacteria
Name of the Bacteria: Bacillus anthracis
Mode of infection:-Meat of infected Goat and Sheep
Target Organ: Lungs

MALARIA

Causative organism: Protozoan parasite
Name of the Protozoan: Plasmodium
Mode of infection:-Female Anopheles mosquito bite
Target Organ: Liver and R.B.C.
Clinical symptoms: - Fever at alternative days, cold
Treatment: - Quinine is used in the treatment.

DENGUE

Causative organism: virus
Mode of infection:- Aedes aegypti mosquito bite
Target Organ: platelet cells
Treatment: - Tamiflu is used in the treatment.

- ❖ Severe acute respiratory syndrome(SARS) is a viral disease.
- ❖ Measles and Mumps diseases are caused by paramixovirus.
- ❖ Tetanus is a soil or wound borne disease.

- ❖ Foot and mouth disease of cattle is caused by virus.
- ❖ Liver rot disease is caused by helmenth parasite called fasiola hepatica(liver fluke)
- ❖ Blight disease in rice is caused by bacteria.
- ❖ Blast disease in rice is caused by fungus.
- ❖ Red rot of sugar cane is caused by fungus.
- ❖ Tikka disease in ground nut is caused by fungus.
- ❖ Smut disease in sorghum is caused by fungus.
- ❖ Citrus canker disease is caused by bacteria.
- ❖ Mosaic disease in tobacco is caused by tobacco mosaic virus.
Bacillus is a rod shape bacterium.
- ❖ Coccus is a spherical (round) shape bacterium.
- ❖ Mesosomes are the respiratory organs of bacteria.
- ❖ Virus cannot be grown on artificial medium.
- ❖ The genetic material of virus is either DNA or RNA.
- ❖ Phytophage is a virus that attacks on plants.
- ❖ Zoophage is a virus that attacks on animals.
- ❖ Bacteriophage is a virus that attacks on bacteria.
- ❖ Mycophage is a virus that attacks on fungus.
- ❖ Zymophage is a virus that attacks on yeast.
- ❖ Cyanophage is a virus that attacks on blue green algae.
- ❖ Bacterium was discovered by Antony van leeuwenloek.
- ❖ Virus is visible under electron microscope.
- ❖ Electron microscope was invented by Knoll and Ruska.
- ❖ Filaris is caused by Wuchararia bancrofti(helminth parasite)
- ❖ Blood samples are collected only during the night times for the diagnosis of filarial.
- ❖ Ringworm, Athlet's foot, Candidiasis are caused by fungi.

NUTRITION

Intake of nutrients is called nutrition.

Nutrients are of two types. They are

Macro nutrients: The nutrients which are required in larger quantities to our body.

Carbohydrates, proteins and lipids are macro nutrients.

Micro nutrients: The nutrients which are required in smaller quantities to our body. Micro nutrients are called as protective nutrients.

VITAMINS: Vitamins are classified into two types based on their solubility. They are

1. **Fat soluble vitamins:** - A, D, E and K vitamins are known as Fat soluble vitamins.
2. **Water soluble vitamins:** - B complex and C vitamins are known as Water soluble vitamins.

Water soluble vitamins destroy due to over cooking.

Water soluble vitamins excrete through urine if they are present excess in our body.

VITAMIN A:-

Chemical name: Retinol

Food source: Leafy vegetables, fish, carrot and fruits like mango etc

Function: - It synthesizes rhodopsine which is required for normal vision.

Deficiency disease: Night blindness (Nictolopia), keratomalacia and xerophthalmia.

Beta carotene is a pro vitamin of vitamin A. It is rich in carrots.

Beta carotene acts as natural anti oxidant.

VITAMIN C:-

Chemical name: Ascorbic acid

Food source: Fruits and vegetables which are sour to taste like Amla, Guava, orange etc

Function: - Ascorbic acid is required for wound healing.
Ascorbic acid helps our body to absorb iron from blood.
It improves the functioning of immune system.
It is required for the synthesis of collagen.

It acts as natural anti oxidant.

Deficiency disease: scurvy (bleeding through teeth gum)

Vitamin C is a heat sensitive vitamin.

VITAMIN D:-

Chemical name: Calciferol

Food source: Sun shine and Cod fish liver oil.

Function: - It helps to bones to absorb calcium from blood.

Deficiency disease: Rickets

VITAMIN E:-

Chemical name: Tocoferol

Food source: Vegetable oils and liver etc

Function: - It is required for the development of reproductive organs.

It is called as beauty vitamin.

It acts as natural anti oxidant

Deficiency disease: Sterility in male and Abortions in female.

VITAMIN K:-

Chemical name: Phylloquinone

Food source: Leafy vegetables and cow milk

Function: - It involves in blood clotting.

Deficiency disease: Over bleeding (haemorrhage) due to delay in blood clotting.

End of Preview.

Rest of the book can be read @

<http://kinige.com/book/Biology+Material+For+Competitive+Exams>

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