

HUMAN HEALTH AND DISEASE



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HUMAN HEALTH AND DISEASE

Health:

In simple terms, Health can be defined as free from all diseases and infections. According to the World Health Organization (WHO), health is not only the absence of disease or illness. It is a state of an active and energetic condition including the physical, mental, and social well-being. A balanced diet and regular exercise play an important role in maintaining a good health of an individual.

There are many factors which affect health, such as:

- Poorly balanced diet.
- Genetic Disorders.
- Stress, and anxiety.
- Infection from pathogens.
- Intake of unhealthy and unhygienic food.
- Lack of exercise and other physical activities.

To maintain a good health, an individual should include a healthy and balanced diet, maintain personal hygiene along with regular exercise and other physical activities. Everyone should be aware of the different types of diseases and their effects.

Diseases:

A disease is an abnormal condition affecting a healthy living organism. It is broadly divided into infectious and non-infectious.

Infectious diseases:

These diseases are caused by the pathogens, such as bacteria, virus, fungi, parasites and can be easily transmitted from one person to another, hence it is also known as a contagious or communicable disease. Common Cold, Tuberculosis, flu, ringworm, malaria are some examples of infectious diseases.

Non-infectious diseases:

Diseases which cannot be transmitted from one person to another are called non-infectious disease, it is also known as a noncommunicable disease. These diseases can be either caused by genetic disorders, unhealthy diets, lack of physical activity, excessive use of tobacco, drugs or alcohol and few environmental factors.

Some Common Diseases In Humans:

- A pathogenic bacterium known as *Salmonella typhi* is known to cause typhoid in humans. This fever can be confirmed by Widal test.
- Pneumonia is caused by *Streptococcus pneumoniae* and *Hemophilus influenzae*.
- Rhinovirus, a group of virus, is known to cause one of the most of infectious

- ailments in humans, cold.
- Plasmodium, a small protozoan causes malaria. Another protozoan, Entamoeba histolytica causing amoebiasis (amoebic dysentery).
 - Ascaris (an intestinal parasite) causes ascariasis.
 - Wuchereria, the filarial worm causes filariasis or elephantiasis.

Life Cycle of Plasmodium:

The malarial infection starts when an infected female anopheles mosquito bites a healthy human. Thus, injects the plasmodium parasites into the bloodstream in the form of sporozoites.

The sporozoites travel quickly into the human liver with the help of the bloodstream and there they asexually divide into the liver cells for 7 to 10 days. In this period no symptoms are produced in the human body.

After the multiplication of the sporozoites, converted into merozoites and they are released from the liver cells in the vesicles. They travel through the heart and arrive in the lungs where they settle down in the lung capillaries.

The disintegration of the vesicles allows merozoites to enter the blood phase of their development.

The merozoites enter the red blood cells in the bloodstream and there they multiply until the cell burst. Then they start to enter more red blood cells. These repeated cycles of parasites cause fever each time when the parasites break the red blood cells and then invade the blood cells.

Some blood cells which are infected leave the asexual multiplication cycle and instead of replicating, merozoites develop into the sexual form of the parasite known as gametocytes.

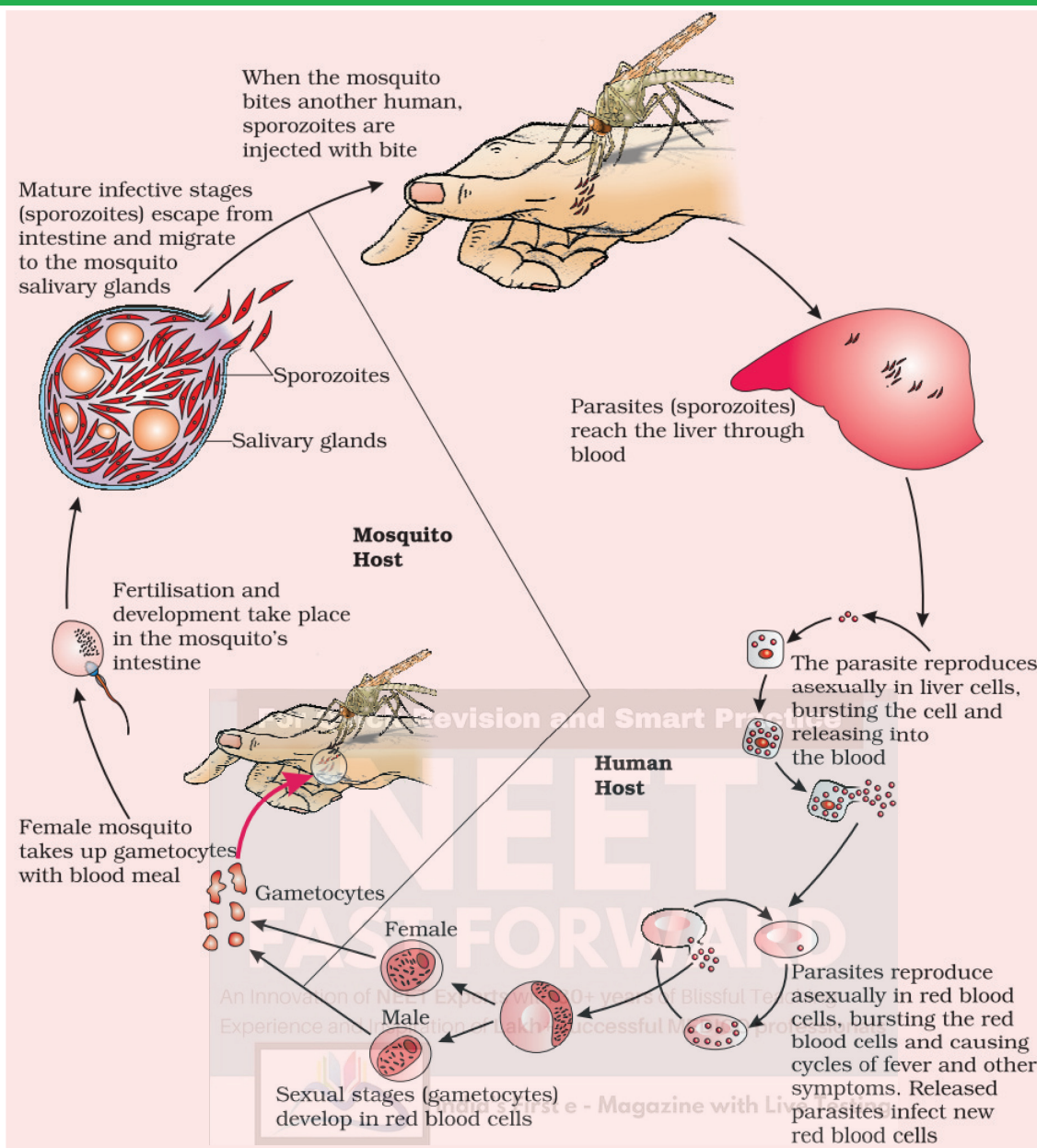
When again the mosquito bites an infected person the gametocytes enter into the mosquito body, where they further develop into mature sex cells called gametes.

The female gametes develop into ookinetes and remain in the midgut wall of the mosquito where they form oocysts on the exterior surface.

Inside the oocyst, many active sporozoites are present. When the oocyst, breaks down, a large number of sporozoites are released into the body cavity and they travel to the mosquito's salivary gland.

This led to the cycle of human infection starts again when the mosquito bites another person.

Hence, the primary host is the mosquito, and the secondary host is the human.



Immunity:

Immunity is the ability of a person to fight against diseases which can be achieved through the presence of antibodies in the person's system.

Immunity is of two types:

- ❖ Innate immunity
- ❖ Acquired immunity

Innate Immunity:

The immunity which is present since the time of birth and is a non-specific type of immunity is called innate immunity. The entry of pathogens is restricted with this immunity with the help of certain barriers.



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