



WITH THE NAME OF ALLAH

**THE MOST GRACIOUS
AND THE MOST MERCIFUL**

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PARASITOLOGY

The area of biology concerned with the phenomenon of dependence of one living organism on another.

Medical Parasitology

Deals with parasites Infecting man,
the diseases they produce,
the response generated by host against them,
&
various methods of Diagnosis and Prevention.

Parasite

An organism that is entirely dependent on another organism, the **host**, for all or part of its life cycle and metabolic requirements.

The term **Parasite** is restricted to protozoa & helminths of medical importance.

HOST- PARASITE RELATIONSHIPS

Parasitism

A relationship in which a parasite benefits from the host and the host gets nothing but injury.

The degree of dependence of a parasite on its host varies.

TYPES OF PARASITES ON THE BASIS OF SIZE

MICROPARASITE

Small, unicellular organisms that multiply within vertebrate host, often inside cells.

e.g. protozoa.

TYPES OF PARASITES ON THE BASIS OF SIZE

MACROPARASITE

Large, multicellular

having no direct reproduction within its vertebrate host.

This category includes Helminths.

TYPES OF PARASITES ON THE BASIS OF HABITAT.

ECTOPARASITES

Organisms which live on the surface of the skin or temporarily invade the superficial tissues of the host
(e.g. lice).

ENDOPARASITES

Organisms that live within the body of the host.
eg. All protozoa & Helminths .

TYPES OF PARASITES
ON THE BASIS OF BEHAVIOUR.

Obligate Parasites:

Facultative Parasites:

Accidental Parasites:

Opportunistic Parasite

Aberrant Parasites:

Free-living:

TYPES OF PARASITES
ON THE BASIS OF BEHAVIOUR.

Obligate Parasites:

Parasites that cannot exist without a host.

(e.g. *Toxoplasma gondii*).

Facultative Parasites:

Organisms that under favourable circumstances can live a parasitic or free-living existence.

(e.g. *Naegleria fowleri*, *Acanthamoeba* spp., *B. mandrillaris*).

Accidental Parasites:

Organisms that attack an unusual host

e.g. *Echinococcus granulosus* in man.

Opportunistic Parasite

Infects only Immunocompromised

e.g. *Negleria fowleri*

Aberrant Parasites:

Organisms that attack a host where they cannot live or develop further (e.g *Toxocara canis* in man).

Free-living:

It describes, the non-parasitic stage of existence which can be lived independent of host,

e.g. Hookworms have active free-living stages in the soil.

Filariform Larvae

Infective third stage larva of the nematodes (hookworm, etc)

Capable of penetrating skin and migrating through the body to reach the intestine.

Cercarial Larva

Kerkos means tail ,

Tailed form larvae, freely swimming in water , in search of appropriate

Intermediate host

HOST

An organism which harbours the parasite,
provides nourishment & shelter to the latter.

TYPES OF HOSTS

Definitive host

Intermediate host

Reservoir host

Paratenic host

TYPES OF HOSTS

Definitive host

In which the most highly developed form of a parasite occurs

or

in which sexual reproduction takes place

.

TYPES OF HOSTS

Intermediate host

The host which alternates with the definitive host

& in which the **larval or asexual stages** of a parasite are found.

Some parasites may require two intermediate hosts for completion of their life cycle.

TYPES OF HOSTS

Examples of Intermediate host

1- Diphyllobothrium latum , (Cestode)

Cyclops as First intermediate host

Fresh water fish as the intermediate host

2- Trematodes ,

asexually reproduce in their first-intermediate snail ;

then seek out & encyst within second-intermediate host (**e.g. fish**);

and sexually reproduce within their definitive host (**e.g. seabird**).

TYPES OF HOSTS

Paratenic host

The host in which Larval stage of a parasite survives but does not develop further.

It is often **not** a necessary part of the life cycle.

It is usually a dead-end host.

eg. Human for Echinococcus granulosus

TYPES OF HOSTS

Reservoir host

The host which serves as an important source of infection to other susceptible hosts.

e.g. Human (Carrier stage) of *E. histolytica*

Epidemiologically, reservoir hosts are important in the control of parasitic diseases.

Zoonoses

An animal infection that is naturally transmissible to humans, either directly or indirectly via a vector.

1. Leishmaniasis (Rock hyraxes, also called rock rabbits),
2. Hydatid disease (dogs being definitive host & sheep, cattle, goats, & pigs (intermediate hosts).
3. Cryptosporidiosis (cattle and other ruminants) ,
4. Schistosomiasis japonicum (cattle, goats, dogs, cats, rodents, pigs, horses)

Zoonoses

5. **Trichinosis** : (cattle, dogs, cats, rodents, pigs, horses & goats)

6. **Cysticercosis** : (Pig)

7. **Chaga's disease** (South American trypanosomiasis) by *T. cruzi* (wild animals)

8. **Fascioliasis** : Sheep and cattle are the main reservoir hosts,
Pigs and donkeys the secondary ones.

TYPES OF HOSTS

Vector

An agent, (usually an insect) that transmits infection from one host to another.

TYPES OF HOSTS

Mechanical vector

A vector which assists in the transfer of parasitic forms between hosts **but is not essential in the life cycle** of the parasite.

e.g. housefly that transfers amoebic cysts from infected surfaces to human-food.

**THANK
YOU**