

Introduction

A parasite is an organism which lives on or within another organism called a host from which it obtains food and protection. Parasites vary according to their biological habits and can be divided into:

Type of the parasite	Definition	Example
1-Obligatory parasites	organisms that cannot exist without a host	<i>Plasmodium</i> and <i>Oxyuris</i>
2-Facultative parasites	organisms that can either live freely in soil or water or as parasites in hosts when unfavorable environmental conditions occur	<i>Strongyloides</i>
3-Accidental parasites	free living organisms which enter the human body by mistake	larvae of flies accidentally ingested and live in the intestine of man
4-Temporary parasite	visits its host from one time to another for feeding	Soft tick
5- Specific parasite	affects only one species of host	<i>Enterobius</i>
6-Coprozoic (Spurious) parasites	Foreign organisms or stages of non human parasites which have been swallowed and pass through the intestine in feces without causing infection.	
7- Ectoparasite	parasite which lives on the outside of the host	<i>Pediculus</i>
8- Endoparasite	parasite which lives within the body of the host	<i>Ancylostoma</i>

Symbiosis: means more or less permanent association of two organisms of different species. This relationship occurs in 4 forms:

a-Parasitism: one of the two organisms (parasite) benefits, as it gains protection and nutrition on the expense of the other (host) that suffers from such association (*Schistosoma*).

b-Commensalism: in which both organisms live together and the commensal organism benefits without causing harm to the other (*Entamoeba coli*).

c-Mutualism: both organisms benefit from the association to an

extent that both cannot live separate (a flagellate in the intestine of ants that feed on wood).

d-Phoresis: in which the phoront is usually the smaller organism and is mechanically carried by the other which is usually large. In phoresis there is no dependency only just to carry (*Dientameoba fragilis* on *Enterobius* egg).

Hosts

Type of the host	Definition	Examples
Definitive	in which the adult stage of the parasite lives, or in which sexual reproduction takes place	man a definitive host for <i>Ascaris</i>
Intermediate	in which the immature or larval stage of the parasite is found, or in which the parasite multiplies asexually	pigs act as intermediate hosts for <i>Taenia solium</i> .
Reservoir	when a parasite utilizes a wide range of animal hosts besides man, such animals represent the reservoir hosts of the particular parasite and act as a continuous source for human infection	
Paratenic (transport)	in which the parasite does not undergo any developmental changes	fish 2 nd intermediate host
Amplifier	is an intermediate host in which asexual multiplications occur	snail 1 st intermediate host
Vector	is a host that transmits parasites from one host to another. It is usually arthropod	Fleas act as vectors for <i>Pasteurella pestis</i> from rodents to man.

Pathogenesis of parasitic infection: Parasites are classified into:

- a) **Pathogenic parasite:** it causes definite pathological lesions in the host (*Ancylostoma*).
- b) **Non-pathogenic (commensal) parasite:** it derives food and protection from the host without causing definite pathological lesions (*Entamoeba coli*).
- c) **Opportunistic parasites:** these are parasites which cause mild disease in immunologically healthy individuals, but they cause severe pathological lesions in immuno-deficient hosts (*Cryptosporidium*).

Zoonosis

Definition: those diseases and infections in which the causative agents are transmitted from animals to man.

Anthroponosis:- the parasitic infections are found mainly in man alone as trichomoniasis and enterobiasis

Anthropozoonosis:- the parasitic infection is mainly in animal and may be acquired by man as in trichinosis and trypanosomiasis.

Zooanthroponosis:- parasitic infections normally maintained by humans but can be transmitted to other vertebrates (for example, amebiasis to dogs)

Classification of zoonotic diseases:

I- According to the source of infection:

Feral or sylvatic	The source of infection is a wild animal with no close relationship to man. Humans become infected when exposed in the course of hunting as in African trypanosomiasis
Domestic	These are parasites transmitted from man's own domesticated animals as in hydatid disease

II- According to the method of transmission:

Direct zoonosis	Infection is directly transmitted from the vertebrate reservoir host to man as in trichinosis
Metazoonosis	Infection is transmitted from the animal reservoir host to man via an arthropod as in leishmaniasis and trypanosomes
Saprozoonosis	Infection is transmitted via a non animal developmental site as the soil and water in larva migrans and <i>Fasciola</i>

Medical parasites

The medical parasites of human are contained in three main parts:

I- Medical Protozoology.

II- Medical Helminthology.

III- Medical Entomology.