STUDY MATERIAL FOR PG IIND SEMESTER

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PARASITISM

Parasitism is an one sided symbiotic relationship for the parasite which always gets benefit from the host in some way or the other and the Parasite is an organism that resides on or in the body of a larger living organism and derive nourishment from its tissues. The typical parasite cause minimum damage to the host. The death of the host may take place due to secondary effects of parasitism. Parasitism is mainly a food coactions, but the parasite derive shelter and protection from the host as well.

Parasites exhibit a tremendous diversity.The parasites may be viral parasite (bacterial, plant and animal viruses).,microbial viruses like Protozoa ,fungi etc. ,Phytoparasites, Zooparasites. They may be ectoparasites (occur on the outside of the body) and endoparasites (live within the body of the host). The endoparasites usually live in the alimentary canal, body cavities, various organs and tissues of the body. For the endoparasites the interior of its host is its microhabitat or microenvironment, while the outside environment is the macroenvironment. The host acts as a buffer between the parasite and the outside environment. Thus mutual adaptations and tolerance between the host and parasite are important factors facilitating successful transmission of endoparasites, and climatic fluctuations tend to alter the physiology of the parasite, host or vector. Mutual adaptations are the parasite's abilities to establish and maintain itself in a favourable location within the host and exists in a favourable location within the host and exist in a proper form for long time enabling subsequent transport to another host and continuation of species. Animals may also be parasitic to plant.

TYPES OF PARASITTES:-- Generally, there are two types of parasites ---the partial parasites and the permanent parasites.

1.PARTIAL PARASITES :--Partial parasites spend only a part of their life cycle on the host,e.g ; glochidium larva of mussels attach with its hook to the integument of the fish. It remains there for a few weeks and then emerges out as a young one to lead an independent life. In another word ,it may be called

facultative parasites; they can survive without the host and only sometimes perform parasitic activities .

PERMANENT PARASITES:--Permanent parasites spend their life cycle on their host. They are also known as Obligate parasites. They can no longer survive without existence of the host.It is found in many different types of plants, fungi, bacteria , animals also.

HYPERPARASITISM:--Sometimes, parasites themselves are parasitized by other organisms. Such parasites are called hyperparasites.For example Nosema notabilis is an hyperparasite on myxosporidian, a common parasite of the urinary bladder of the toadfish.

HOST SPECIFITY : -- Most parasites are adapted to host of one phylum only. Some parasites have more than one host like primary, secondary, or intermediate host. They do not change their host at random, thereby they show what is called host specificity, biochemical which involves a typical biochemical adjustment between the host and parasite. Among nematodes the species with direct life cycle show more specificity than the ones with indirect life cycles.

The parasites always establish a kind o relationship with their host which is one of the reason for causing the minimum damage. The number of parasites inside or outside a host depends mainly on the relative size of the host and the parasite. The minimum number of the parasite required to obtain nourishment from the host for maximum time possible without causing death to the host.

PARASITIC ADAPTATIONS – The parasitic adaptation can be defined as the profound changes and modifications occurring in pursuit of successful living so that the parasite is fully adapted inside the body of the host. Some of the parasitic adaptations are as follows:--

1.presence of cuticle affords protection against the action of digestive juices of the host.

2.well developed clinging organ for attachment such as hooks, suckers. They also develop piercing and sucking organs.

3.Feeble power of locomotion .

4.Reduced sense organs in general. However, the nervous system is well developed in relation to the organ of attachment.

5. as the endoparasites feed on the digested food, thedigestive tract is either altogether absent or shows various degrees of simplification.

6.Most endoparasites live anaerobically.

7.Highly complicated reproductive system with high fecundity .Most of the endoparasites are hermaphrodites.

8.Extra multiplicative phase like polyembryony and parthogenesis are also met with in many parasites.e.g. liver flukes produce by parthogenesis the daughter redia and cercaria to increase the number of offsprings.

9.Intestinal parasites have evolved the mechanism of secretion of antienzymes to neutralise the action of the digestive juice.

10. Almost all parasites in general show different stages of evolution in relation to their host.

EFFECTS OF PARASITES ON HOST –

Parasites may not causes immediate mortality but they cause damage to body structure, should it become excessive, may cause death.Some of the common changes are as follows—

Parasites cause diseases in their hosts like Malaria , Trypanosomiasis, Trichianisis, Ancylostomiasis etc.

2. Parasites induce their host to form antibodies.

3.Parasites also cause mechanical injuries to their host for example Ascaris may block the small intestine or bile duct.

4.Some parasites produce animal galls on their hosts.

5.Parasites sometimes invade the gonads of the host and destroy them. Sacculina brings about similar changes on the gonads of the host crab which in the case of male show female characters. Even the shape of male crab shows

changes towards femaleness. The kind of change brought about by the parasites on the host resulting in sexual impotency is called “PARASITIC CASTRATION “.

6.Parasites even causes changes in the behaviour of the host like drowsiness and coma in the host.