Parasitism

Parasitism is the close coexistence of two organisms, one which (the **parasite**) gains benefits at the expense of the other (the **host**). Parasite is metabolically dependent on its host. The host is damaged by the parasite to varying degrees, but in most cases the parasite doesn´t cause immediate death of the host. In certain cases, the parasite can also have positive effect on its host (eg stimulates its reproduction).

Classification of parasites

According to the biological nature of the organism

- **Obligatory parasites** live exclusively parasitically. This also includes organisms that are parasitic only at certain development stages (eg larvae). As example - all viruses, most known pathogenic protozoa (Plasmodium, Trypanosoma), mosquitoes (Aedes, Anopheles), tapeworms (Taenia solium).
- **Optional parasites** live in the wild, but under certain circumstance they switch to a parasitic way of life (eg in contact with a weakened host). These include, for example, amoebae of the genus Naegleria and Acanthomoeba

According to location

- **Ectoparasites** live on the surface of the body or superficial organs of the host, such as ticks, lice and human flies
- **Endoparasites** live inside the host´s body
  - extracellularly − stereptococci, *Trypanosoma gambiense* a *rhodesiense*, fungi pf the genus *Aspergillus*;
  - intracellularly − Viruses, mykobakteria, *Trypanosoma cruzi*, *Plasmodium*;

Manifestations of parasite adaptation

Morphological adaptation

- parasites are smaller in size than their host;
- parasites have a simplified body structure, sometimes the whole organ structure may be missing, for example, the tapeworm does not have a developed digestive system;
- in parasites, specific structures are formed , which simplify parasitic way of life (they allow it to enter the host ´s body, protect against the immune system).

Fyziologicko-biochemická adaptace Physiological-biochemical adaptation

- parasites inactivate host´s enzymes;
- parasites often undergo metabolic changes, such us switching from aerobic to anaerobic metabolism and vice versa;
- some parasites can survive even in conditions of total anoxia;
- parasites are able to protect themselves against toxins in the host´s body.

Reproduction adaptation

- parasites can undergo asexual reproduction, eg toxoplasma;
- during their lifetime some parasites overcome complex development cycles, for example, liver fluke, plasmodium;
- parasites have high reproductive potential.

Behavioral adaptation

- parasites are able to influence the behaviour of their host;
- parasites can find suitable host.

Genetic adaptation

- viruses have a significantly reduced genome because they primarily utilize the entire genome of the host cell;
- it is possible for the parasite´s genome to interact with the host genome and affect its genetic expression;
- parasites have specific genes encoding proteins which allow them to contact and penetrate the host organism.

Negative effects of parasites on the host

Direct

- they produce toxic substances;
- mechanically damage cells and tissues;
- produce enzymes that cause cell breakdown

Indirect

- evoke immunopathological conditions, such as autoimmune diseases, allergic reactions in the host;
- the host reacts to the presence of the parasite by a defensive reaction which results into its gradual depletion;
- the presence of the parasite can affect host´s behavior, for example mental disorders, increased libido;
- if a mother is infected during her pregnancy it can lead to fetal malformations.

Links

Related articles

- Infection
- Yellow Fever

Source

- ws:Parazitismus

External links

- http://biologia.sengym-moodle.sk/index.html#motolice.html

Literature

- KOČÁREK, Eduard. *Biologie prokaryot* [lecture for subject Lékařská biologie, specialization Všeobecné lékařství, 2. lékařská fakulta Univerzita Karlova v Praze]. Praha. 2013-02-22.
- KOČÁREK, Eduard. *Ekologie a ekogenetika* [lecture for subject Lékařská biologie, specialization Všeobecné lékařství, 2. lékařská fakulta Univerzita Karlova v Praze]. Praha. 2013-02-22.