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Connection between malacology and parasitology -
A parazitológia és malakológia kapcsolata

Some few species of parasites develop only in one or more intermediate hosts /i.h./. These i.h. are some Molluscs in case of parasites belonging to the classes of Trematoda, Cestoda and Nematoda, which are endoparasites.

The practical parasitology studies above all those parasites which are important in public- or animal health. The life cycle and i.h. of them are wellknown and their control is organized as well.

Different species give the matter of investigation in each territories. The species of Fasciola and Paramphistomum are very important in the whole world, Fasciola gigantica, Fasciolopsis buski and the species of Paragonimus in Asia, and the various species of Schistosoma in the tropics.

We have to pay attention to parasites as well, which are necessary in the general aspect of the spreading of parasites. The conditions of their spreading is bordered by the fact, there is some connection between the life cycle and the i.h. This however makes their occurrence possible on those places, where they could not have been found, but the i.h. and the circumstances of life are present.

The extensivity of commercial relations, connecting the whole world and the growth of tourism are dangerous in a way because by their help they can import and settle parasites and/or its i.h. as well /7/. The migratory birds mean the same danger.

Some authors described the presence of Catatropis verrucosa /FRÖLICH, 1789/ in many birds, so we can wait for its appearance, because its i.h. is Bithynia tentaculata /LINNÉ, 1758/ a mollusc species. It is widespread e.g. in Danube and Ipoly streams. This snail species is the i.h. also of Psilotrema apiculigerum /MÜHLING, 1898/ parasite, it was described from Aythia nyroca /1/, Fulica atra and Anser anser /8/ in Germany and France as well in Ukrainia /U.S.S.R./. In Hungary the species found by MATSKÁSI /1971/ in Ondatra zibethica, and stated that in the trematode species originally living in birds

get into the rodents, living at the bank of the rivers, can become adult and begin egg-laying.

The ecological connection is most important between the parasites and the definitive host. Either their living place must be identical or they must have a carrier-host, which is promote to get the parasite to the definitive host. This can prove the i.h. will not be a "deadlock" for the trematode.

The infective larvae /cercaria/ can get into the definitive host by active or passive way. In the first case they can move themselves and in this way get in the definitive host, and penetrate into it through its skin. In the other case the hatched larvae either stick to the objects of its surrounding /e.g. stones, grass, other molluscs' shells etc./, or get in a carrier-host and by the help of it reach the definitive host. At this time the carrier-host is consumed by the definitive host. It is also possible that the i.h. is eaten by the definitive host.

My previous investigations /6/ prove that among the listed 36 trematode species from the 33 snails and two bivalves connected with them, only two are land-snails, the others are freshwater or live in moist surroundings /amphibious species/. This explains that the cercariae have a bigger chance to get into their definitive hosts in moist surroundings /swimming in the water/, than in dry surroundings, where infection can only happen by the consumption of the i.h. or carrier-host.

We have found a snail species, that can be the i.h. of ten trematodes, and such a trematode which has 13 snail species as i.h.

Snail, as i.h. are listed as the greatest part of trematodes in order: Lymnaea stagnalis /LINNÉ, 1758/, Planorbis planorbis /LINNÉ, 1758/, Bithynia tentaculata /LINNÉ, 1758/, Lymnaea peregra ovata /DRAPARNAUD, 1805/, Lymnaea auricularia /LINNÉ, 1758/, Bithynia leachii /SHEPPARD, 1828/, Lymnaea palustris /O.F.MÜLLER, 1774/ and Planorbarius cornutus /LINNÉ, 1758/. There are trematodes, which are able to develop in most snail species: Echinoparyphium recurvatum /LINSTOW, 1873/, Metagonimus yokogawai /KATSURADA, 1912/, and Dicrocoelium dendriticum /RUDOLPHI, 1819/.

We must take notice critically of these data, because malacologists do not always classify the i.h. molluscs. Consequently we can meet data, which are founded on a mistaken classification, and a "new" species can appear from the misusage and mingling of snails' synonym names.

Helicella itala and Helicella ericetorum are described as the i.h. of Dicrocoelium dendriticum /4/. These two names are the synonym names of the same snail species /2/. - Bithynia ventricosa was listed as the i.h. of Echinostoma revolutum /4/. Though the Paludina ventricosa GRAY, 1821 is a synonym name of Bithynia leachii, however this is similar to the Lymnaea truncatula f. ventricosa MOQUIN-TANDON /2/. Because of the other i.h. of this trematode is in the first place among the mainfamily of Lymnaeaceae, therefore it is more likely, that we must consider the real i.h. this snail species of the preceding parasite.

It is wellknown, that we can infect such snails with larvae of trematodes which can't be infected in natural conditions. We can take notice of these data as a guide.

Some trematode species have a strong adherence to their definitive host, and what is more Fasciola hepatica to the i.h. as well. It can develop only in Lymnaeidae snails. From these we can consider only one species as i.h. on one geographical region, e.g. in Hungary only the Lymnaea truncatula /O.F.MÜLLER, 1774/ species /3/. Other Lymnaea species can be as i.h. of Fasciola hepatica in other continents. Therefore, we have to investigate the molluscs of Hungary from point of view to see if they are possibly on i.h. of one or the other trematode.

We must use the results of malacological investigations, and want to apply the unified nomenclature in collaboration. In this way we can avoid the disturbing misunderstandings.

Összefoglalás

A Trematoda, Cestoda és Nematoda osztályba tartozó paraziták közül többnek a fejlődéséhez - egyebek mellett - valamilyen puhatestű köztigazdára van szüksége. A köz- és általategészségi szempontból jelentős parazitákon kívül, melyek földrajzi területenként eltérőek, az általános parazitológiai kép szempontjából a többi faj is figyelmet érdemel. A paraziták és/vagy köztigazdáik elterjesztésére lehetőség nyílik a kiterjedt kereskedelmi, turisztikai kapcsolatokon keresztül, de a költöző madarak által is. A parazita, a köztigazda és a végleges gazda között ökológiai kapcsolat áll fent. A nedves környezet alkalmasabb több parazita életciklusa szempontjából. Egy puhatestű több trematodának is lehet köztigazdája, egy trematoda több puhatestű fajban is megtalálja

a fejlődéséhez alkalmas körülményeket. Ezek közül ki kell szürnünk a helytelen nomenklatura használatából és a pontatlan fajmeghatározásokból eredő átfedésekét és tévedésekét. A laboratóriumi köztigazda fertőzési kísérletek nem minden esetben tükrözik a természetes körülmények között végbemenő folyamatokat.

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