«Сейфуллин оқулары – 18(2): «XXI ғасыр ғылыми - трансформация дәуірі» халықаралық ғылыми - практикалық конференция материалдары = Материалы международной научно-практической конференции «Сейфуллинские чтения - 18(2): «Наука XXI века - эпоха трансформации». - 2022.- Т.I, Ч.II.- Р. 205-207.

ADVANTAGES OF THE STAINING METHOD FOR STUDYING THE MORPHOLOGICAL CHARACTERISTICS OF CESTODES

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At present, despite advances in molecular diagnostics, microscopic analysis of eggs and larvae, as well as adult worms, remains the main method for diagnosing intestinal helminths in humans and animals throughout the world. In most cases, such a morphological diagnosis is based on the identification of genera or species of helminths based on their characteristic morphology [1].

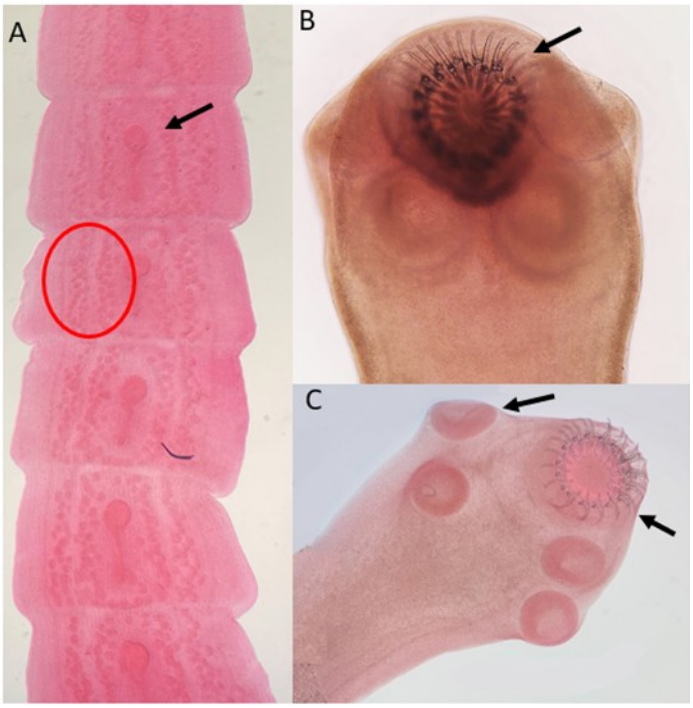
The unambiguous identification of the helminth genus/species often depends on direct morphological examination of the whole organism or diagnostically useful parts (eg, proglottids). Ideally, this is done previouslywith histological sectioning and staining, which can be informative in some cases but often precludes or complicates a specific diagnosis [2, 3].

Depending on the research being carried out and the state of the parasite itself, there are various methods for staining cestodes [4]. Mainly used are Mayer's hematein solution, Blazhin's lactic carmine stain, alum carmine solution, and hematoxylin-eosin stain.

Hematoxylin-eosin staining is the most common method for staining helminths. This method allows you to establish relationships between parts of the body, perfectly revealing all cellular elements and some non-cellular structures. In almost all cases, regardless of the task, hematoxylin-eosin staining is used. In other cases, when the researcher is faced with a special task, they use special methods, staining at the same time in parallel with hematoxylin-eosin.

The advantage of this method is double staining: hematoxylin - the main dye - stains the cell nuclei, eosin - an acidic dye - stains the protoplasm of cells, and to a lesser extent, various non-cellular structures.

During the study, we stained adult worms of the genus *Taeniidae* with hematoxylin-eosin. The procedure for staining: first of all, it is necessary to rinse the tapeworms in distilled water, then stain with a solution of hematoxylin. The colored worms are washed with water and differentiated with acidified alcohol; during differentiation, the parenchyma brightens to a light pink color, and organs and ducts clearly appear against its background. Then washed with a weak solution of ammonia until the sections turn blue. Then stained with an aqueous solution of eosin, to stain the eosinophilic structures of the cell. Rinse thoroughly in three portions of distilled water to remove excess eosin, and finally dehydrate the object.



Picture 1. Examples of stained samples can then be relatively easily differentiated. (A. a mature segment of *Mesocestoides spp*., B. hooks of *Taenia spp*., C. scolex of *Taenia spp*.

For our study, the advantage of the method was that it allows you to establish the relationship between the parts of the body, perfectly revealing all cellular elements and some non-cellular structures (Fig. 1). Using the staining method, the species *Mesocestoides spp., T. krabbei, T. hydatigena, Dipylidium caninum* were differentiated. The distinctive characteristics of which were their morphological structure, for example, cucumber like tapeworm was distinguished from other cestodes by cocoon-shaped egg capsules. In cestode species, significantly attention was paid to hooks and genital papillae [5, 6].

The need for a staining procedure has for many years been significantly superior to morphological screening. Since, when observing an unfamiliar morphology, parasitologists often turn to atlases and textbooks to determine the type of helminth in question. These references usually describe the parasite's standard presentation without considering potential anomalous forms.

Since morphological deviation from typical ranges is also an important factor and source of confusion in studies of wild animal helminths, staining methods allow optimal examination of the morphology of the parasite and identification of its genus/species.

Thus, it can be concluded that the use of staining methods, even being time-consuming, justifies the study. These methods allow a more thorough examination of the structure and location of the internal organs, which in turn makes the morphological analysis more accurate and is an integral part of the parasitological study.

The research presented above was financially supported by the Ministry of Education and Science of the Republic of Kazakhstan to frame project AP08052252 for 2020-2022.

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