

Significance of using nephridia in the taxonomy of family Enchytraeidae

(Annelida: Oligochaeta)

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Abstract. A survey of the structure and variety of the nephridia in the subclass Oligochaeta is presented. The most diversified forms are discernible in the families of Megadrile earthworms. Two main types can be differentiated: holonephridia and meronephridia. Both types can be exonephric when they penetrate the body-wall and open to the exterior. However, in the meronephridia, the ducts can open also into the intestine; in this case, it is called enteronephric. The nephridia in the family of Enchytraeidae are holo-exonephric; namely, they always have a ciliated funnel connected to a coiled duct much folded and embedded in a compact elongated body covered by a layer of peritoneum and through an efferent duct open to the exterior in the next segment. The shape of this organ, the structure and the ratio of pre- and post-septale parts, and the origin of the efferent duct can be generic or specific in character. The number of nephridia in pre-clitellar segments may contribute to identification of the species, but our knowledge on these characteristics is insufficient; therefore, it would be very useful to record these traits in all species descriptions.

Key words. Metanephridium, Oligochaeta, earthworm, Tubificidae, Enchytraeidae.

Introduction

The excretory organs in Annelida are metanephridia (nephridia for short). They are always metameric in arrangement. The structure and development of these organs in the subclass of Oligochaeta were studied by the following famous researchers: VEJDOVSKÝ (1879, 1884), BEDDARD (1895), MICHAELSEN (1928), STEPHENSON (1930), BAHL (1919, 1924, 1926, 1941, 1942a-c), and GATES (1972). From these studies, we know that this organ is highly variable in different families of Oligochaeta. In this work, I will try to summarize our knowledge on this organ through references and will contribute new data (or information) by conducting new observations regarding its usefulness in the identification of species or genera.

Material and methods

The illustrations were taken from references and from own micrographs. The photomicrographs were taken on living worms with a Zeiss Axioskop 2 microscope, using DIC (differential interference contrast) illumination and an Olympus Colour View digital camera with DP-Soft software. On all micrographs the scale bar represents 50 µm.