RESEARCH NOTE

ULTRASTRUCTURE OF THE SECONDARY OSMOREGULATORY CANALS IN THE SCOLEX AND NECK REGION OF *SILUROTAENIA SILURI* (BATSCH, 1786) (CESTODA: PROTEOCEPHALIDAE)Zdeňka Žďárská¹ and Jana Nebesářová^{1,2}¹Institute of Parasitology, Academy of Sciences of the Czech Republic, Branišovská 31, 370 05 České Budějovice, Czech Republic;²Faculty of Science, Charles University in Prague, Viničná 7, 128 43 Praha 2, Czech Republic

Abstract. The secondary osmoregulatory canals in the scolex and neck region of *Silurotaenia siluri*, a parasite of the catfish *Silurus glanis* (L.), terminate below the tegument basal plasma membrane. The basal plasma membrane of the osmoregulatory canal syncytium is in tight contact with the tegument basal plasma membrane.

Many authors, studying the excretory system of proteocephalideans (at the light microscopical level) note that the secondary osmoregulatory canals open outside (Kraemer 1892, Janicki 1928, de Chambrier et al. 1991, 1992, de Chambrier and Vaucher 1994, de Chambrier and Rego 1995). More recently some authors (de Chambrier and Vaucher 1997, 1999, Scholz and Hanzelová 1998, Scholz et al. 1998, 1999, Gil de Perterra and de Chambrier 2000, Zehnder and de Chambrier 2000, Cañeda-Guzmán et al. 2001, de Chambrier 2001, de Chambrier et al. 2003) have reported (at the light microscopical level) that the secondary osmoregulatory canals terminate beneath the tegument, i.e. they do not open outside, as reported earlier by Riegenbach (1895). In Proteocephalidea, secondary osmoregulatory canals have been observed mainly in proglottides, but very rarely in the scolex and neck parts.

Specimens of *Silurotaenia siluri* (Batsch, 1786) recovered from the intestine of *Silurus glanis* (L.) were fixed in 3% glutaraldehyde in 0.1 M cacodylate buffer (pH 7.2) for 2 h at 4°C, postfixed for 2 h at 4°C in 2% osmium tetroxide, dehydrated through an acetone series and embedded in Durcupan. Series of ultrathin sections were cut with a Reichert Jung Ultracut E ultramicrotome, stained with uranyl acetate and lead citrate and viewed in a TEM JEOL 1010 operated at 80 kV. Semithin sections were stained with toluidine blue.

Our transmission electron microscopical (TEM) examination revealed that the peripheral part of the secondary osmoregulatory canal, penetrating the body wall of the scolex and neck of *S. siluri*, consists of 3 parts – parenchymal, intramuscular, and subtegumental. The narrowest part of the canal is that penetrating among the longitudinal and circular muscles (Figs. 1–4). The most dilated part is the subtegumental part (Figs. 2–4) localised between the basal lamina and the tegument basal plasma membrane. The syncytium of the secondary osmoregulatory canal, with the exception of the apical portion of the dilated subtegumental part, bears bleb-like microvilli. The basal plasma membrane of the basal portion of the dilated subtegumental part is tightly connected with basal lamina, but the basal plasma membrane of the apical portion of the dilated part is only at some points in tight contact with the tegument basal plasma membrane (Figs. 1–3).

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In Proteocephalidea, the terminal part of the secondary osmoregulatory canals has only been described in detail at the light microscopical level in pregravid proglottides of *Thaumasioxcolex didelphidis* Cañeda-Guzmán, de Chambrier et Scholz, 2001 by Cañeda-Guzmán et al. (2001). At the TEM level we demonstrated presence of the secondary osmoregulatory canals in the scolex and neck region of *Silurotaenia siluri* and showed that they terminate beneath the tegument basal plasma membrane, i.e., they do not open outside. To elucidate the structure and function of the terminal part of the secondary osmoregulatory canals of Proteocephalidea, more species should be studied at the TEM level.

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Figs. 1–4. Serial sections of the secondary osmoregulatory canal of *Silurotaenia siluri*. In Figs. 2–4 note the contact points of the tegument basal plasma membrane and the basal plasma membrane of the canal syncytium (arrowheads). **Fig. 1.** The secondary canal sectioned at the level of the circular muscle fibre. At this level the canal is constricted. **Fig. 2.** Detail of the subtegumental and intramuscular part of the canal. **Figs. 3, 4.** Parts of this canal in the region between two circular muscles. B – bleb-like microvilli of the canal syncytium; CM – circular muscles; IC – intramuscular part of the canal; LM – longitudinal muscles; M – microtriches; SC – subtegumental part of the canal; T – tegument; double arrow – basal lamina; arrow – tegument basal plasma membrane; hollow arrow – basal plasma membrane of the canal syncytium; arrowhead – dense contact points of both plasma membranes. Scale bars: Fig. 1 = 2 μ m; Figs. 2–4 = 1 μ m.

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