WIADOMOŚCI PARAZYTOLOGICZNE
T. 50 (SUPLEMENT) 2004: 116–117

THE DIFFERENTIATION AND FUNCTIONAL ULTRASTRUCTURE OF THE PARENCHYMATIC EGG ENVELOPES: THEIR ROLE IN CESTODE EMBRYOGENESIS

ZDZISLAW SWIDERSKI[1,2], DAVID BRUCE CONN[3]

[1]W. Stefański Institute of Parasitology, Polish Academy of Sciences, 51/55 Twarda Street, 00-818 Warsaw, [2]Department of General Biology and Parasitology, Warsaw Medical University, Chałubińskiego 5, 02-004 Warsaw, Poland; [3]School of Mathematical and Natural Sciences, Berry College, Mount Berry, Georgia 30149-5036, U.S.A.,

Previous TEM studies on the differentiation and functional ultrastructure of different types of parenchymatic envelopes in cyclophyllidean cestodes provide interesting examples of specialization of the medullary parenchyma. Two putative roles of parenchymatic envelopes are: (1) egg protection; and (2) egg packing, providing conditions for group infection of intermediate and consequently definitive hosts. These functions have never been demonstrated experimentally. Comparison of ultrastructural data from our own studies and literature on the different types of parenchymatic envelopes in the representatives of various cyclophyllidean families, such as paruterine organs in Nematotaeniidae and Mesocestoididae, uterine and parenchymatic egg capsules in Anoplocephalidae (Linstowiinae and Inermicapsiferinae, respectively) revealed interesting homologies and analogies in corresponding egg-protecting structures. Four types of parenchymatic envelopes have been analyzed and compared: (1) paruterine organs and paruterine capsules, in the nematotaeniid cestodes *Nematotaenia dispar* and *Distoichometra bufonis*, parasites of amphibians; (2) parenchymatic capsules in a representative species of Anoplocephalidae: Inermicapsiferinae, *Inermicapsifer madagascariensis*, a parasite of humans and rodents; (3) paruterine organs of the mesocestoidid *Mesocestoides lineatus*, a parasite of mammals; and (4) uterine capsules with modified medullary parenchyma in 2 representatives of Anoplocephalidae: Linstowiinae: *Oochoristica agamae* and *O. anolis*, parasites of reptiles. These four types of egg envelopes of parenchymatic origin show great variation in their final appearance and, in addition to their own developmental vagaries, they can also become associated with envelopes of embryonic and uterine origin which can even further obfuscate their origin. The above variation in parenchymatic envelopes among five

*Financial support by KBN Grant No. 6 P04C 013 14 is gratefully acknowledged

cyclophyllideans parasitising different hosts (amphibians, reptiles and mammals) may have important implications for the transmission strategies of the above-mentioned species. Distinct variations of final forms of parenchymatic envelopes compared here raise many questions regarding the development, functional ultrastructure and evolutionary parallelisms among cyclophyllidean eggs, as well as possible phylogenetic relationships of these cestodes. This great diversity in the ultrastructure of different homologous layers may reflect specific functional and structural adaptations to intermediate hosts and/or environmental conditions.