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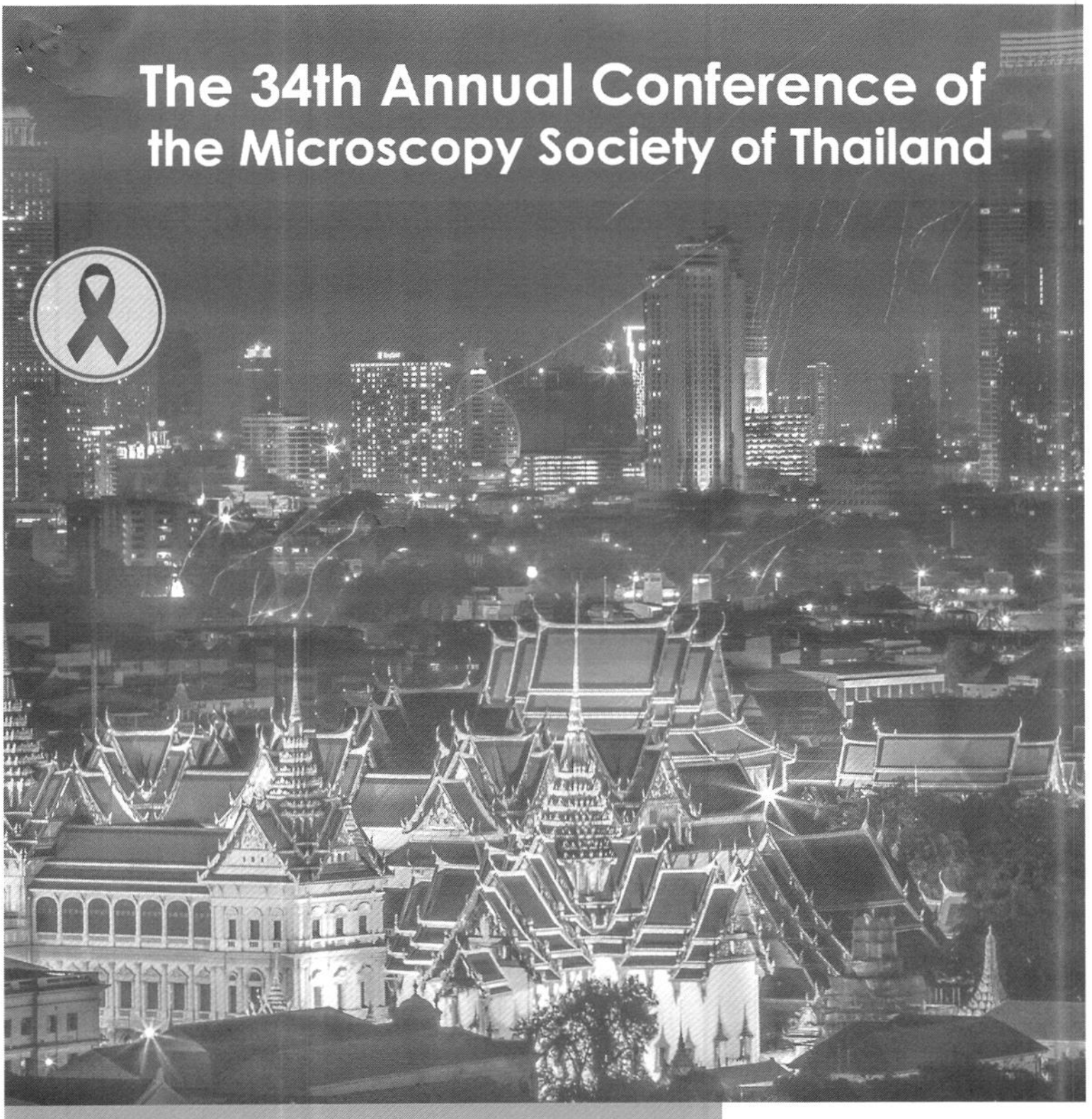

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Surface Morphology of *Echinostoma revolutum* (Digenea: Echinostomatidae): Excysted Metacercariae

Chalobol Wongsawad [1], Jittikan Intamong [2], Kittichai Chantima [3*]
[1] Department of Biology, Faculty of Science, Chiang Mai University, Chiang Mai 50202, Thailand
[2] Department of Zoology, Faculty of Science, Kasetsart University, Bangkok 10900, Thailand
[3] Energy and Environment Program, Faculty of Science and Technology, Chiang Rai Rajabhat University, Chiang Rai 57100, Thailand
*Presenter e-mail address: kittichai.cha@crru.ac.th

Abstract

The present study was performed to observe the tegumental ultrastructure of excysted metacercaria of *Echinostoma revolutum* (Digenea: Echinostomatidae). The metacercariae of *E. revolutum* were obtained from freshwater snails, *Filopaludina* spp., naturally infected with the metacercariae, was studied by scanning electron microscopy. The excysted metacercaria was elongated, ventrally concave and pointed posteriorly. The anterior half body surface was covered with numerous peg-like tegumental spines. The oral sucker, circular and was situated subterminally at the antero-ventral side of the body. The lip of the oral sucker was devoid of spines. The lip of oral sucker appeared wrinkled cytoplasmic processes and has ciliated knob-like structure papillae. The head crown was surrounded by 37 retractable, horseshoe-shaped collar spines, which were embedded in cytoplasmic pockets. Ventral sucker was median at one third of the body. The excretory pore was terminal, and shown a smooth tegument. This study provides information that useful for identification of this species, which may be of taxonomic significance.

Keywords: surface morphology; *Echinostoma revolutum*; excysted metacercariae; SEM

Background

Echinostoma revolutum is an intestinal trematode of birds and mammals including humans, it is also be the type species of this genus [1-2]. *E. revolutum* is food-borne parasitic zoonoses, which can cause a serious public health importance especially in Southeast Asia [3]. The actual morphological features of this species are required for setting an updated standard description. Therefore, in this study we described and illustrated the topographical features of newly excysted metacercariae of *E. revolutum* by using scanning electron microscopy (SEM) and to improve the knowledge of the topography of the tegumental surface as taxonomic characteristics of *E. revolutum*.

Materials and Methods

Specimen preparation

Freshwater snails, *Filopaludina* spp. were collected from small stream in paddy fields of Hang Dong district (18°43′38.6″N 98°55′48.6″E), Chiang Mai province, Thailand. Encysted metacercariae of *E. revolutum* were removed from the pericardial region of naturally infected, *F. martensi martensi* and *F. sumatrensis polygramma* snails. Metacercariae were excysted under a cover slip, by quickly applying high pressure with the pin on the cover slip, and observed morphologically.

SEM study

The newly excysted metacercariae were rinsed several times in saline and fixed in 2.5% (w/v) glutaraldehyde at 4°C for 24 hours, washed several times in phosphate buffer and post fixed with 1% osmium tetroxide for 3 hours. Subsequently, they were dehydration in a graded alcohol series, dried in a critical-point dryer, and then coated with gold. The specimens were observed and photographed under a JEOL JSM-5400LV scanning electron microscope.

Results and Discussion

The SEM observations showed the topography surface of newly excysted metacecaria (**Figure 1**). The flukes were elongated, ventrally concave and pointed posteriorly. The anterior half body surface was covered with numerous peg-like tegumental spines and became slightly finer posteriorly. Peg-like tegumental spines were densely distributed on the anterior surface to the posterior margin of ventral sucker level, and became sparsely distributed and disappeared posteriorly. The oral sucker, circular and was situated subterminally at the antero-ventral side of the body. The lip of the oral sucker was devoid of spines. The lip of oral sucker appeared wrinkled cytoplasmic processes and has ciliated knob-like structure papillae (**Figure 1E**). Ciliated knob-like structure papillae