

## J-7

### *Biomphalaria glabrata* (유폐아강: 또아리 물달팽이과): 인체 기생 이전고환극구흡충 (흡충강: 극구흡충과)의 실험적 제2 패류 중간숙주

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#### 서론

A freshwater snail species, *Biomphalaria glabrata* belonging to the family Planorbidae have been well known as the first intermediate host of *Schistosoma mansoni*. The life cycle studies on *B. glabrata* with other trematode parasites have been previously performed by several investigators. This snail species has also been reported to act as the first intermediate host of *E. paraensei* and *E. liei* (Lie and Basch, 1967; Jeyarasasingam *et al.*, 1972; Kuris, 1980). Metacercariae of echinostomatid trematodes, such as *Echinostoma liei*, *E. revolutum* and *E. macrorchis*, have been observed in *B. glabrata* (Fried and Bennett, 1979; Kuris and Warren, 1980; Anderson and Fried, 1987; Fried *et al.*, 1987; Lo, 1995).

It was suggested that *B. glabrata* may play an important role as a molluscan intermediate host of *E. cinetorchis*. However, no life-cycle study on cercarial and metacercarial infection to the laboratory-reared *B. glabrata* snails has been conducted to date.

#### 재료 및 방법

The snails of *B. glabrata* were originally collected in Puerto Rico, and were maintained in conventional aquaria. Each snail was exposed to a dose of twenty miracidia hatched from the eggs of *E. cinetorchis*. The exposed snails were kept in an aquarium at 26°C. Twenty days after miracidial infection, the release of cercariae was examined from the snails kept under the fluorescent illumination (700 Lux) for 2 hrs. Later, the snails were crushed for further inspection of cercariae inside the snails. Fifty to 200 cercariae shed from *Segmentina hemisphaerula* infected with *E. cinetorchis* miracidia were exposed to each experimental snail of *Biomphalaria*, and the snails infected with experimental doses of cercariae were examined for the detection of metacercariae. Fifty metacercariae obtained from *Biomphalaria* snails were fed orally using a tuberculin syringe connected with a plastic tube to each experimental laboratory rat (Sprague-Dawley strain, 120 g/ body weight). Rat feces was examined daily for eggs of *E. cinetorchis*. Immediately after finding the eggs, the rats were killed by spinal dislocation and dissected. The small intestines of the rats were removed. The worms were collected under the dissecting microscope.

## 결과 및 요약

The present study aimed to examine the potential involvement of *Biomphalaria glabrata*, known as a molluscan intermediate host of *Schistosoma mansoni*, in the life cycle of *Echinostoma cinetorchis*, one of the echinostomes that are ubiquitous flukes of vertebrate and are of importance in human and veterinary medicine and wildlife diseases. Echinostomes can be maintained easily and inexpensively in the laboratory and provide good models for biological research ranging from the molecular to the organismal. In the present study, no echinostome cercaria was released from the *B. glabrata* experimentally infected with *E. cinetorchis* miracidia, whereas all the *Biomphalaria* snails infected with *E. cinetorchis* cercariae were found to be infected with the metacercariae. This is the first report that *B. glabrata* experimentally act as the second intermediate host of *E. cinetorchis*, and might be employed as one of the target molluscs for establishing a biological research model in the laboratory with *E. cinetorchis*.

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