

Taxonomy of Thecamoebae (Rhizopodea: Protozoa) from Korea

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摘 要

1990년 9월 강원도 평창군 도암면 솔바우리 대관령 계곡 늪지의 *Sphagnum*에서 채집된 유각근족충류를 광학현미경 및 주사전자현미경(SEM)을 사용하여 동정하였다. 그 결과 3과 4속 6종을 확인하였으며 그 목록은 다음과 같다: *Arcella bathystoma*, *Trigonopyxis arcula*, *Heleopera sphangi*, *H. petricola*, *Lesquereusia epistoma*, *L. spiralis*. 이들 가운데 *L. spiralis* 외의 5종은 지금까지 한국에서 기록이 없던 종들이다.

Key words: thecamoebae, Rhizopodea, taxonomy, Korea.

INTRODUCTION

Thecamoebae are the amoeboid protozoa in which the cytoplasm is enclosed within a discrete shell and which extrude filose or lobose pseudopodia from distinct aperture. Thecamoebae are present in wide range of moist and freshwater habitats from moss, soil, peat and standing water to sewage-treatment works (Ogden and Hedley, 1980).

Many species were previously described in Europe and North America (Leidy, 1879; Penard, 1890; Cash and Hopkinson, 1905; 1909; Cash *et al.*, 1915). Recent studies with scanning electron microscope have

shown the detailed shell morphology of the species (Heal, 1963; Hedley and Ogden, 1973; 1974; Hedley *et al.* 1977; Ogden, 1979; 1980a; 1980b; 1984; 1988a; 1988b; Ogden and Zivkovic, 1983; Ogden and Pitta, 1989). The purpose of the present work, following the taxonomic studies Chung and Choi (1989) and Chung and Cha (1990) as a series of taxonomic studies on thecamoebae in Korean freshwater, is to carry out taxonomic studies on Korean freshwater thecamoebae inhabiting in *Sphagnum* and to redescribe it for the other researches as basic data.

MATERIALS AND METHODS

Samples were collected from the *Sphagnum* in the swamp at Mt. Taekwanryŏng Kangwŏn-do, September 1990. Selected shells from the samples were washed in several changes of distilled water, then individuals were manipulated onto cleaned cover slips. The cover slips were mounted on standard aluminum stubs, coated with gold in a sputter coater unit and examined on a SEM operating at 10 KV. Photographs and measurement were made as prescribed by Chung and Choi (1989). The systemic schemes of Honigberg *et al.*, (1964). Levine *et al.*, (1980) and Ogden and Hedley (1980) were referred. Korean name was based on Kang *et al.*, (1971) and Kim *et al.* (1988).

DESCRIPTION

As a result of this study, six species of four genera in three families were identified, of which five species are newly reported from Korea. They are preceded by an asterisk (*).

Superclass Rhizopoda Von Siebold, 1845 근족충 상강
Class Lobosea Carpenter, 1861 엽상근족충 강
Order Arcellinida Kent, 1880 유각변형충 목
Family Arcellinidae Ehrenberge, 1843 대접벌레 과

1. * *Arcella bathystoma* Deflandre, 1928 각진모자벌레 (신칭) (Pl. 1, Fig. A)

Arcella bathystoma Deflandre, 1928 (cited from Ogden and Hedley, 1980); Ogden and Hedley, 1980 (p. 28, pl. 3).

A. vulgaris: Leidy, 1879 (p. 170, pl. xxviii, fig. 1,12,13).

Material examined: 7 inds., a swamp in Taekwanryŏng, 26 IX 1990.

Description: Shell brown, hemispherical in lateral view. circular with domed aboral region having several angular facets. Diameter of shell 50-55 μ m, height of shell 30-35 μ m. Shell surface pitted with numerous small pores, composed of proteinaceous material. Aperture invaginated, central, invaginated, triangular and surrounded by small organic cement collar. Diameter of aperture 13-18 μ m.

Remarks: This species is similar to *A. discoides* in broad view, but can be distinguished from the latter species with domed aboral region having angular facets (Ogden and Hedley, 1980).

Family Trigonopyxidae Loblich and Tappin, 1964 세모입벌레 과

2. * *Trigonopyxis arcula* (Leidy, 1879) 세모입벌레 (신칭) (Pl. 1. Figs. B-C)

Diffugia arcula Leidy, 1879 (p. 116-117, pl. xv. figs. 34-37; pl. xvi, figs. 30, 31).

D. arcua: Cash and Hopkinson, 1909 (p. 53, pl. xxii, figs. 8-11).

Trigonopyxis arcua: Ogden and Hedley, 1980 (p. 66, pl. 24).

Material examined: 3 inds., a swamp in Taekwanryöng, 26 IX 1990.

Description: Shell yellow or brown, hemispherical in lateral view. Diameter of shell 90 μ , height of shell 40-45 μ m. Shell surface composed of agglutinated mineral particle. Aperture central, invaginated, triangular and surrounded by organic cement collar. Organic cement that covers apertural surface extends over rim of shell. Diameter of aperture 21-24 μ m.

Remarks: This species is similar to the genus *Arcella* in broad appearance, but can be distinguished from it by the agglutinated shell material and triangular apertural collar (Cash and Hopkinson, 1909).

Family Hyalosphenidae Sohuize, 1877 투명주머니벌레 과(신칭)

3. **Heleopera sphangi* (Leidy, 1874) 물이끼주머니벌레(신칭) (Pl. 1, Fig. D; Pl. 2, Fig. A)

Diffugia (Nebela) sphangi Leidy, 1874 (cited from Cash and Hopkinson, 1909).

Heleopera picta: Leidy, 1789 (p. 162, pl. xxvi, fig. 1-11).

H. sphangi: Cash and Hopkinson, 1909 (pp. 143-145, pl. xxx, figs. 4-9); Ogden and Hedley, 1980 (p. 80, pl. 29).

Material examined: 2 inds., a swamp in Taekwanryöng, 26 IX 1990.

Description: Shell yellow or brown, ovoid and laterally compressed. Length of shell 94-108 μ , breadth of shell 70-75 μ m, depth of shell 42-51 μ m. Aboral region broad hemispherical, composed mainly of sand grains. Aperture terminal, slightly convex in broad view and narrow linear opening bordered by thin collar of organic cement. Diameter of aperture 40-45 μ . Half of shell surface to aperture composed of siliceous shell plates, smooth.

Remarks: This species is similar to *H. petricora*, but can be distinguished from it by the anterior half of shell covered with siliceous shell plates (Ogden and Hedley, 1909).

4. **Heleopera petricola* Leidy, 1879 거친판납작벌레(신칭) (Pl. 2, Figs. B-C)

Heleopera petricola Leidy, 1879 (p.165, pl.xxvi, figs. 12-20); Cash and Hopkinson, 1909 (pp. 137-141, pl. xxix, figs. 13-19).

Material examined: 1 inds., 2 swamp in Taekwanryöng, 26 IX 1990.

Description: Shell colorless, but sometimes of pale ferruginous brown, ovoid and laterally compressed. Length of shell 80-100 μ m, breadth of shell 51-57 μ m, depth of shell 40-48 μ m. Shell surface composed of flat mica plate. Aperture terminal, linear, surrounded by organic collar. Diameter of aperture 31-34 μ m.

Remarks: Leidy (1879) described that this species is distributed in sub-alpine region. This species can be separated from other species of *Heleopera* by the narrow and flat mica shell plate and the narrow slit-like aperture (Cash and Hopkinson, 1909).

5. **Lesquereusia epistoma* Penard, 1902 긴목포아리벌레(신칭) (Pl. 2, Fig. C; Pl. 3, Fig. A)

Lesquereusia epistomium Penard, 1902 (cited from Cash and Hopkinson, 1909); Cash and Hopkinson, 1909 (p. 71, pl. xxiii, figs. 10, 11); Ogden and Hedley, 1980 (p. 82, pl. 30).

L. spiralis: Leidy, 1879 (pp. 124-128, pl. xix, fig. 13).

Material examined: 2 inds., a swamp in Taekwanryöng, 26 IX 1990.

Description: Shell colourless, ovoid or circular with unsymmetrical long neck. Length of shell 136 μ m,

breadth of shell 113 μ m. Shell surface composed mainly of silicious rods. Aperture terminal, roughly circular and bordered by cilicious rods, without organic cement collar. Diameter of aperture 36 μ m.

Remarks: This species is similar to *L. spiralis*, but can be differentiated from it by the elongated neck joined to the body of shell at an angle, so it has one short and one long side.

6. *Lesquereusia spiralis* (Ehrenberg, 1840) 짧은목또아리벌레 (신칭) (Pl. 3, Fig. B)

Diffflugia spiralis Ehrenberg, 1840 (p. 199) [cited from Cash and Hopkinson, 1909 (p. 66-70, pl. XXIII, fig. 8)].: Leidy, 1879 (pp. 124-128, pl. XIX, fig. 13).

L. spiralis: Cash and Hopkinson, 1909 (pp. 66-70, pl. XXIII, fig. 8); Ogden, 1979a (pp. 203-128, pl. XIX, fig. 2-7); Ogden and Hedley, 1980 (p. 86, pl. 32).

Material examined: 6 inds., a swamp in Taekwanryöng, 26 IX 1990.

Description: Shell colourless, circular or ovoid with unsymmetrical neck, and slightly flattened laterally. Length of shell 85-120 μ m, breadth of shell 75-109 μ m, depth of shell 62-84 μ m. Shell surface composed of numerous, silicious curved rods. Aperture terminal, roughly circular surrounded by silicious rods, without organic cement collar. Diameter of aperture 20-25 μ m.

Remarks: This species can be differentiated from *L. epistoma* by the compressed lateral view and short neck.

ABSTRACT

In September 1990, the species of Thecamoebae (Rhizopodea: Protozoa) inhabited in *Sphagnum* at Mt. Taekwanryöng were collected. The six species of Thecamoebae belonged to three families were identified: *Arcella bathystoma*, *Trigonopyxis arcular*, *Heleopera sphangi*, *H. petricola*, *Lesquereusia epistoma*, *L. spiralis*. Except *L. spiralis*, five species were newly reported in Korea. They were described and figured with photograph.

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EXPLANATION OF PLATES

PLATE 1

Fig. A. *Arcella bathystoma*, broad view.

Fig. B-C. *Trigonopyxis arcula*, B, broad view; C, apertural view.

Fig. D. *Heleopera sphangi*, broad view.

PLATE 2

Fig. A. *Heleopera sphangi*, apertural view.

Fig. B-C. *Heleopera petricola*, B, broad view; C, apertural view.

Fig. D. *Lesquereusia epistoma*, broad view.

PLATE 3

Fig. A. *Lesquereusia epistoma*, apertural view.

Fig. B. *Lesquereusia spiralis*, broad view.

PLATE 1

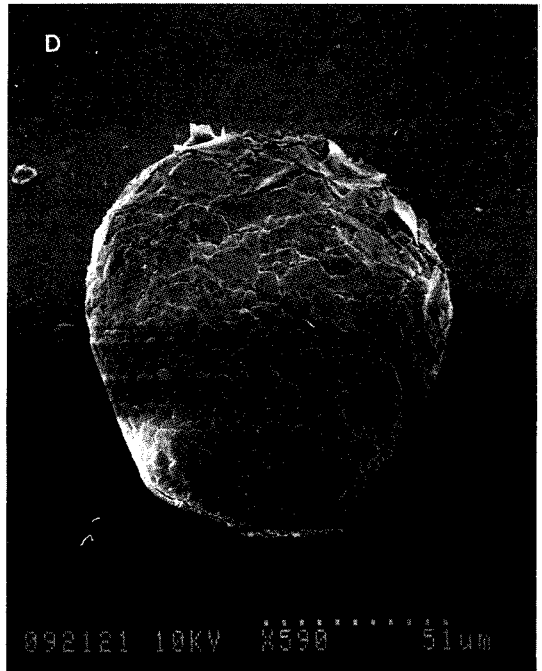
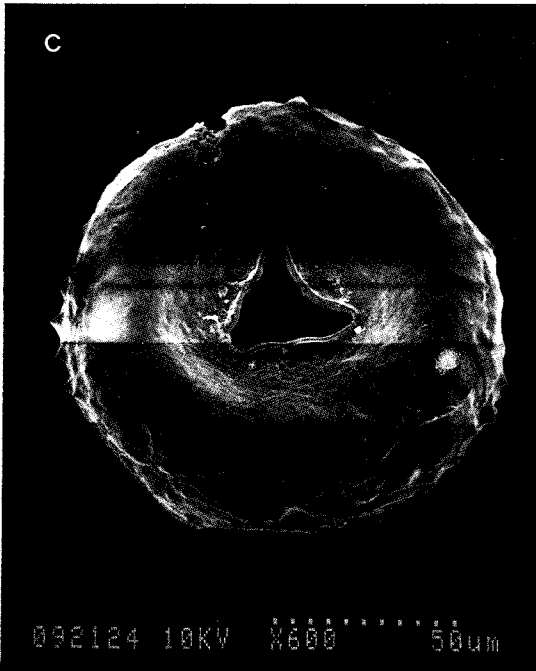
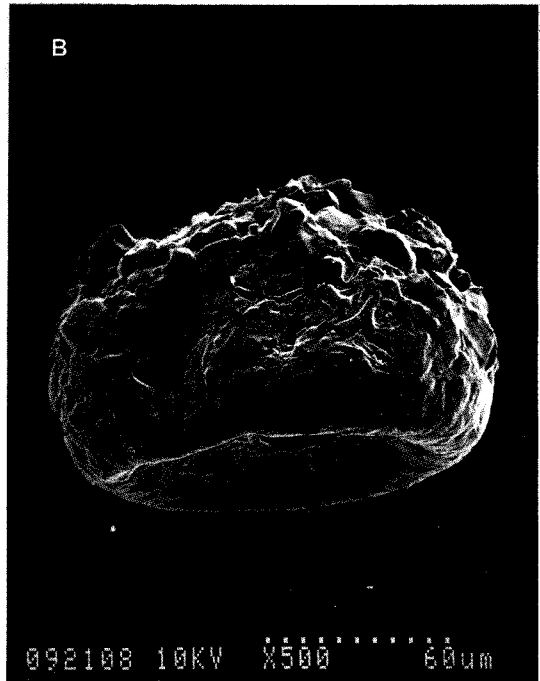


PLATE 2

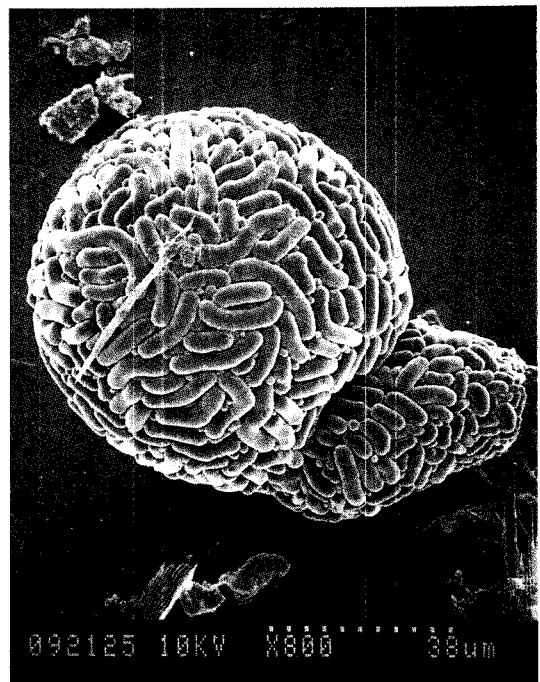
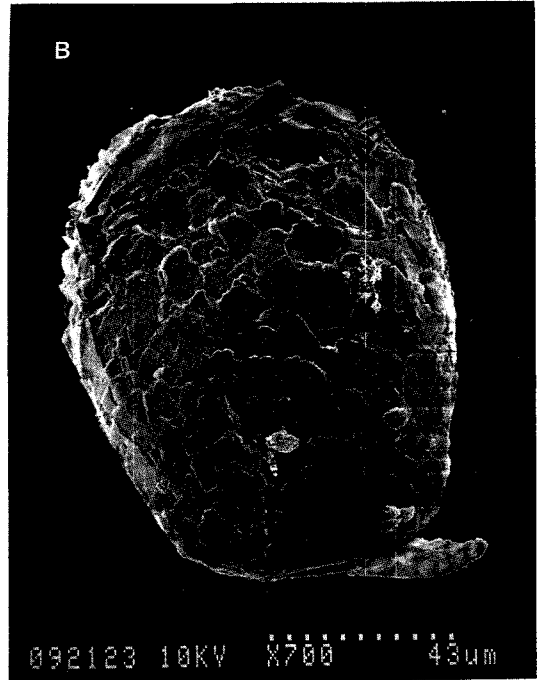


PLATE 3

