

Two Sponges of Family Tethyidae (Demospongiae: Hadromerida) from Korea

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Abstract: A new marine sponge in the family Tethyidae, *Tethya uljinensis* n. sp. was collected from Uljin, Korea in 2007. *Halicometes koreana* in the family Tethyidae was redescribed. *Tethya uljiensis* n. sp. is closely to *Tethya simi* in skeletal structure and spicule composition. But, it differs in the size of spicules (strongyloxea) and shape of oxyaster.

Key words: new species, Tethyidae, *Tethya*, *Halicometes*, Korea

Tethyidae Gray (Demospongiae, Hadromerida) contains 14 valid genera such as *Tethya*, *Anthotethya*, *Burtonitethya*, *Columntis*, *Halicometes*, *Laxotethya*, *Nucleotethya*, *Oxytethya*, *Stellitethya*, *Tectitethya*, *Tethyastra*, *Tethycometes*, *Tethytimea* and *Xenospongia*. Approximately 80 species described and distributed worldwide.

The genus *Tethya* is characterized by spherical sponge with a well developed cortex never stalked but may have basal roots. Main skeleton formed by strongyloxea bundles radiating from the center of the sponge. Megasters and microasters are variously distributed in ectosome and choanosome (Hooper, 1994). Five species of this genus have been reported from Korean water (Kim et., al; 1968; Rho and Sim, 1972; Sim, 1981; Kim and Sim, 2005).

The genus of *Halicometes* is characterized by small spherical sponge, having moderately long stalk. The megascleres occur in radiating bundles. Megasters are oxyaster or oxyspheraster of different size. Microasters are homogenous euaster but never oxyasterote and exotyle (Hooper, 1994). This genus is reported in Korean fauna for the first time.

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MATERIALS AND METHOD

The present study on marine sponges was based on the specimens collected by scuba diving in Uljin and by a fishing net in Seogwipo, Korea. All procedures were followed the methods of Kim and Sim (2005) and Rützler (1978). The materials examined in this study were deposited in the Natural History Museum, Hannam University (HUNHM), Daejeon, Korea.

SYSTEMATIC ACCOUNTS

Phylum Porifera Grant, 1836
Class Demospongiae Sollas, 1885
Order Hadromerida Topsent, 1984
Family Tethyidae Gray, 1848

1. *Tethya uljinensis* n. sp.
(Fig. 1-2)

Type specimen: Holotype (Por. 86), Uljin, Koungsangbuk-do, 7 Mar. 2007, J. R. Lee, 20 m in depth, deposited in HUNHM, Daejeon, Korea.

Description: Hemi-spherical shape, size up to 4×3.5×3 cm. Surface, slightly mammiform papillae. Oscules, invisible. Texture rough and firm. Colour brown in life gradually changed to ivory in alcohol. Cortex 0.3 cm thick, well developed, distinguished from layer of microscleres. Spheraster, oxyaster and tylaster distributed throughout entire cortex. Main skeleton formed by bundles of strongyloxea radiating from center of sponge. Megascleres thick and large strongyloxea and slender strongyloxea. Microscleres, spheraster, tylaster and oxyaster. Some spherasters forked rays. Oxyasters spine at ray tips.

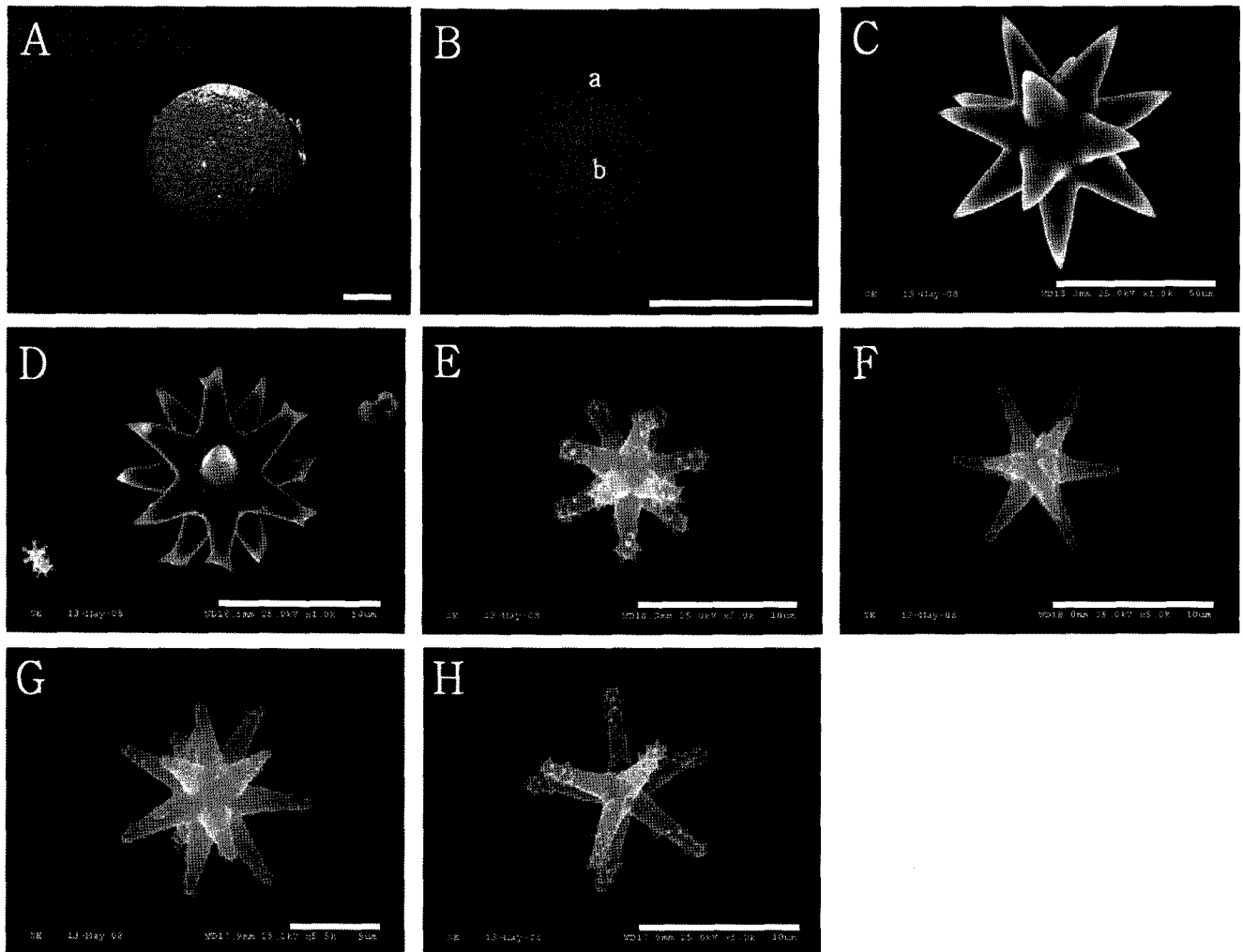


Fig. 1. *Tethya uljinensis* n. sp. A, entire animal; B, megascleres (a, large strongyloxea; b, small strongyloxea); C-D, spheraster; E-G, tylaster; H, oxyaster. Scale bars=1 cm (A), 1 mm (B), 50 μm (C-D), 10 μm (E-F, H), 5 μm (G).



Fig. 2. Skeleton of *Tethya uljinensis* n. sp.

Spicules (μm)

Megascleres

Large strongyloxea	-----	1,250×2,625×15-35
Small strongyloxea	-----	720×1,200×5-12

Microscleres

Spheraster	-----	50×70
Tylaster	-----	10×20
Oxyaster	-----	10×20

Etymology: This species is named after type locality Uljin, Kounsangbuk-do, Korea.

Remarks: *Tethya uljinensis* n. sp. is closely related to *Tethya simi* (Sara, 2000) in radiate skeleton and spicule composition but, are differs in the size of spicules and the shape of oxyaster. Strongyloxeas of this new species are larger than *T. simi*. This new species has only spiny oxyaster at the tips of ray, but *T. simi* have spiny and smooth oxyasters (Table 1).

Table 1. The comparison of spicules between *T. uljinensis* n. sp. and *T. simi*

Species	<i>T. uljinensis</i> n. sp.	<i>T. simi</i>
large strongyloxea	1,175-2,625×15-35	1200-1800×10-20
small strongyloxea	720-1,250×5-15	300-700×3-11
spheraster	50-70	40-80
oxyaster	10-20	8-20
tylaster	10-20	8-20
shape of oxyaster	only spiny ray	spiny and smooth ray

2. *Halicometes koreana*
(Fig. 3)

Tethya koreana Rho and Sim, 1979, pp. 126-127 pl. 2, Figs. 1-4.

Specimen examined: Segwipo, 17 Feb. 1976, B. J. Rho, 60-80 m in depth by fishing net.

Description: Ovoid sponge with stalk. Stalk stretch to center head. Head size up to 1.4×2 cm, 1cm in diameter. Stalk size up to 3.8 cm, 0.7 cm in diameter. Cortex 0.1 mm thick. Head surface slightly mammiform papillae. Oscule invisible. Texture rough, firm and elastic. Colour gray in head surface and beige inner, gradually changed to dark ivory in alcohol. Head structure occurs in radiating bundles of megascleres, bristling at the surface tubercles. Stalk structure, strongyloxea bundles stretched to center of head. Megascleres, large strongyloxea and small strongyloxea. Microscleres, oxyaster, oxyspheraster and tylaster, distributed throughout the sponge, more densely in cortex.

Spicules (μm)

Megascleres

Large strongyloxea ----- 1,175-2,950×15-50

Small strongyloxea ----- 200-830×8-12

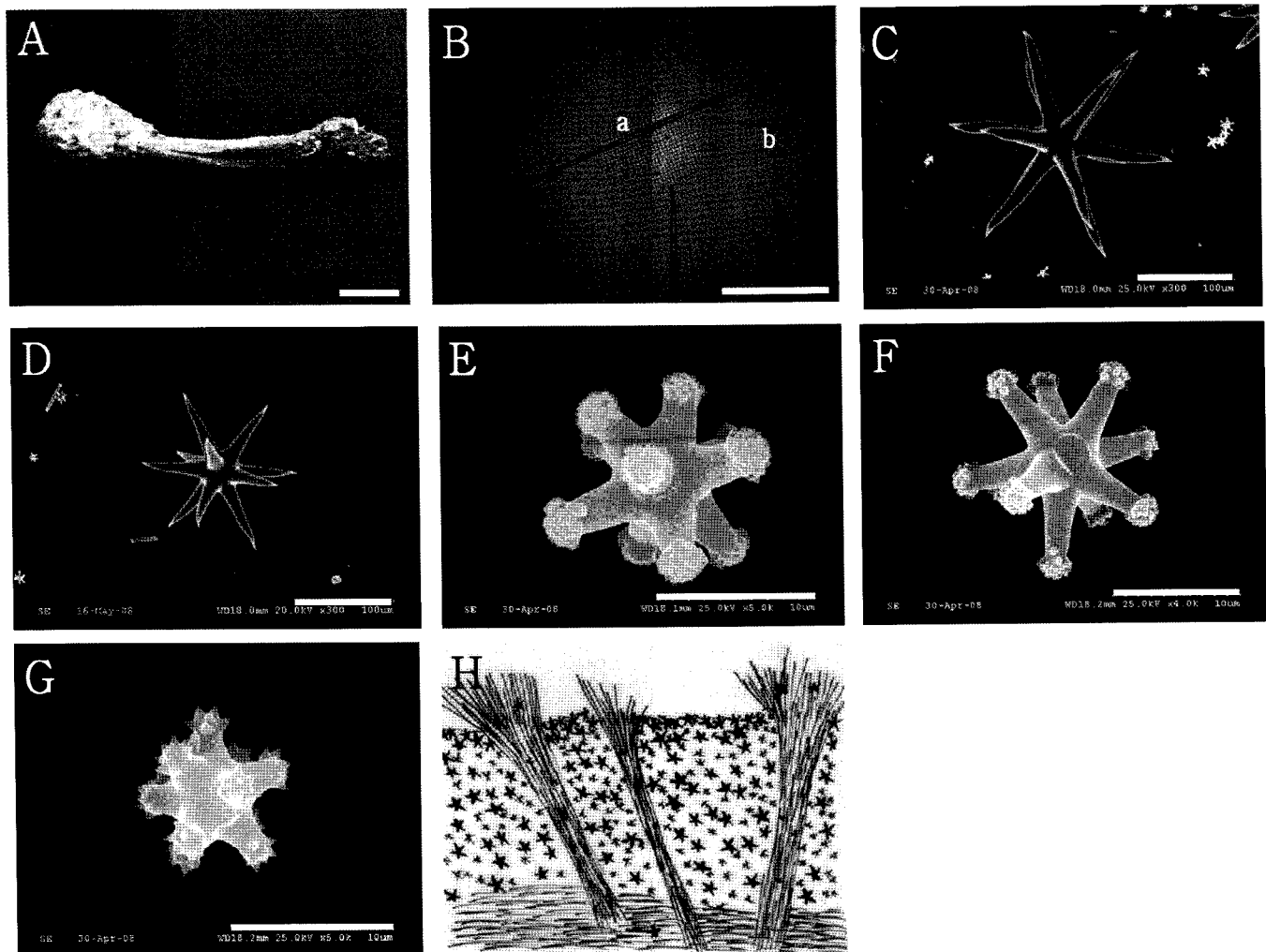


Fig. 3. *Halicometes koreana*. A, entire animal; B, megascleres (a, large strongyloxea; b, small strongyloxea); C, oxyaster; D, oxyspheraster; E-G, tylaster; H, skeleton. Scale bars=1 cm (A), 500 μm (B), 100 μm (C-D), 10 μm (E-G).

Microscleres

Oxyaster -----	150-235
Oxyspheraster -----	50-110
Tylaster -----	10-20

Remarks. The previous record had been described a type of spheraster (Rho and Sim, 1979). But, spheraster displays oxyaster and oxyspheraster by SEM in this study.

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