

A New Species in the Family Irciniidae (Demospongiae: Dictyoceratida) from Korea

Chung Ja Sim* and Kyung Jin Lee

Department of Biology, College of Natural Sciences, Hannam University, Daejeon 306-791, Korea

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Sponges of the family Irciniidae are poorly known in Korean waters. This paper describes a new species of new genus, *Bergquistia coreana* n. sp. in the family Irciniidae (Demospongiae: Dictyoceratida) from Jeju Island, Korea from 1998 to 1999. *Bergquistia* n. gen. is characterized by extremely simple fasciculated and uncored primary fibres. However, in the choanosomal region, primary fibres are made of wider clear web. Secondary fibres form a very thin regular uncored network. The sponge surface has thick and regular conules. The colour is beige throughout the sponge, and the texture is slightly hard and compressible. Thickness of filament is variable.

The family Irciniidae was originally established as the Hirciniidae by Gray in 1867 and used by Lendenfeld in 1886 as Hircinidae (Cook and Bergquist, 1996). The genera *Psammocinia* Lendenfeld, 1889, *Ircinia* Nardo, 1833 and *Sarcotragus* Schmidt, 1862 were initially included in the family Thorectidae Bergquist, 1978 (Bergquist, 1978, 1980), but Bergquist and Wells (1983) noted that the genera *Ircinia*, *Sarcotragus* and *Psammocinia* are composed of a distinct sub-group within that large assemblage because of the presence of fine collagenous filaments within the sponge matrix and the presence of the furanosesterterpene variabilin. Therefore, these genera were separated from family Thorectidae and transferred to the family Irciniidae (Bergquist, 1995).

The new genus *Bergquistia* is characterized by simple fasciculated and uncored primary fibres. In the choanosomal region, primary fibres are made of wider clear web. Secondary fibres form a very thin regular uncored network. The surface is hard and has thick regularly conulose. The colour is beige throughout the sponge, the texture is slightly hard and compressible. Thickness of filament is variable.

Sponge specimens were collected by SCUBA diving at 15-20 m deep of Jeju Island, Korea. The specimens were fixed in 95% methyl alcohol or absolute alcohol and stored, separately, in the same quality alcohol. The sponge surface and conules were observed under a stereomicroscope. The skeletal arrangement and filaments were studied under light microscope and SEM (Hitachi, S-3000N). The type specimens are deposited at the Natural History Museum, Hannam University (HUNHM), and Department of Biology,

Hannam University, Daejeon, Korea.

Results

Phylum Porifera Grant, 1836
Class Demospongiae Sollas, 1885
Order Dictyoceratida Minchin, 1900
Family Irciniidae Gray, 1867

Bergquistia n. gen.

Type species: *Bergquistia coreana* n. sp.

Diagnosis: primary fibres uncored and simply fasciculated, particularly near conules. In choanosomal region, primary fibres made of wider clear web. Secondary fibres form very thin regular uncored network. Sponge surface has thick and regular conules. Colour beige throughout sponge, and texture a little hard and compressible. Thickness of filament variable. Filaments show peculiar surface.

Etymology: The generic name, *Bergquistia*, is named after Dr. Patricia R. Bergquist, who has contributed greatly to dictyoceratid sponge taxonomy. Gender feminine.

Remarks: There are three genera, *Psammocinia*, *Ircinia* and *Sarcotragus*, in the family Irciniidae which is characterized by the presence of collagenous filaments in matrix. *Bergquistia* n. gen. is easily distinguished from the genera *Psammocinia* or *Ircinia*, because primary fibres of them are cored with sands, but fibres of the new genus are not cored with detritus except primary fibre near the conules. Also, uncored skeletal fibres of the new genus resemble the genus *Sarcotragus*, but skeletal structure of the new genus is distinguished from it by weakly fasciculated primary fibres and simple secondary fibres.

The skeleton of *S. arbuscula* (Lendenfeld, 1889) is

* To whom correspondence should be addressed.
Tel: 82-42-629-7485, Fax: 82-42-625-3277
E-mail: cjsim@mail.hannam.ac.kr

A New Sponge Genus from Korea



Fig. 1. *Bergquistia coreana* n. sp. A, Sponge specimen. B, Conules. C, Filamentous membrane. D-E, Skeletal structure. F, Fasciculated primary fibre. G, Filament emerging from hole in fibre. H, Terminal knob of filament. Scale bars = 1 cm (A), 2 mm (B), 1 mm (C-E), 200 μ m (F), 5 μ m (G), and 20 μ m (H)

very loose, longitudinal and with trellis-like fascicles, forming a network by simple connected fibres. In Lendenfeld's species the distinction of the fibres into main and connecting fibres is difficult, whereas the primary and the secondary fibres of the type species are easily distinguished.

The skeleton of *S. muscarum* (Schmidt, 1864) (in Lendenfeld, 1889) comprises longitudinal fascicles which are 800 µm broad, connected by more or less fascicular transverse fibres, and always joined to the main fascicles by a number of diverging roots. But the secondary fibre of the new genus is not fasciculated.

Bergquistia coreana n. sp.
(Fig. 1A-H)

Type specimens: Holotype (Por. 40). Hyungjesum (Jejudo Island), 21 Oct. 1998, SCUBA, 20 m deep, K. J. Lee, deposited in the HUNHM, Daejeon, Korea. Paratypes. Por. 40-1, Munsum (Jejudo Island), 20 Oct. 1998, SCUBA, 20 m deep, K. J. Lee; Por. 40-2, Songaksan (Jejudo Island), 21 Oct. 1998, SCUBA, 18 m deep, K. J. Lee; Por. 40-3, Hyungjesum (Jejudo Island), 5 Oct. 1999, SCUBA, 15 m deep, K. J. Lee, deposited in the Department of Biology, Hannam University, Daejeon, Korea.

Diagnosis: As for genus

Description: Holotype, irregular massive sponges, size up to 7×6 cm wide, 4 cm thick. Paratypes, diverse growth form, digitate, massive, thickly encrusting.

Habitat. Tightly attached to rocky substrate.

Oscules and pores. Oscules, 1-2 mm in diameter, irregularly scattered on surface. Sometimes large oscule, around 5 mm in diameter, located at rounded low lobe. Microscopically small pores, 30 µm in diameter, distributed all over sponge surface.

Colour. Beige throughout sponge in life. All specimens changed to brown in alcohol.

Texture. Slightly hard, compressible and difficult to tear apart.

Surface. Smooth and covered with well-developed sharply pointed slender conules, 1-3 mm high, 2-4 mm

apart. Thin filamentous membrane clear from sands and spicules. Other animals such as soft coral or ascidiacean animals live on some sponge surface.

Skeleton. Primary fibre, 1,500-2,500 µm apart. Slightly fasciculated primary fibre, 200-400 µm in diameter, usually lack any coring material. Primary fibres divided into two or three branches at the end of fibre, which make conule protrude out of surface. End of primary fibre, near conule, slightly cored with some spicules. Simple secondary fibre, 50-100 µm in diameter, clear of debris. Endosomal skeletal fibres thicker and darker than ectosomal fibre. Primary and secondary fibre skeletons supplemented by dense aggregation of fine filaments distributed in all sponge. Filament, 0.7-2.5 µm in diameter, emerged from hole in fibre. Terminal knob, 3-5 µm in diameter. Two or three filaments coiled with each other forming a thicker filament which shows peculiar surface figure.

Etymology: This species name, *coreana*, is named after its nationality, Korea.

Remarks: The beige color, slender conules and a little hard texture make this species easy to recognize in nature.

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