

# Two New Sponges of the Genus *Haliclona* (Demospongiae: Haplosclerida: Chalinidae) from Korea

Dong Won Kang and Chung Ja Sim\*

Department of Biological Sciences, College of Life Sciences and Nano Technology,  
Hannam University, Daejeon 305-811, Korea

## ABSTRACT

Two new marine sponges in the family Chalinidae, *Haliclona* (*Haliclona*) *uljinensis* n. sp. and *Haliclona* (*Reniera*) *hongdoensis* n. sp., are collected from Uljin and Hongdo Island, Korea during 2004-2007. *H. (H.) uljinensis* n. sp. is closely related to *H. (H.) oculata* in type of spicules. However, ectosomal skeleton of *H. (H.) uljinensis* n. sp. is reticulated and isodictyal reticulated type but *H. (H.) oculata* has not any dermal specialization in skeleton. The growth form of *H. (H.) uljinensis* n. sp. is thin encrusting with numerous cylindrical tubes on the surface but *H. (H.) oculata* is solid branch form. *Haliclona* (*R.*) *hongdoensis* n. sp. is closely related to *H. (R.) aquaeductus* in skeletal structure and growth form. However, oxeas of *H. (R.) hongdoensis* n. sp. are larger than *H. (R.) aquaeductus*'s.

**Key words:** *Haliclona*, new species, Haplosclerida, Chalinidae, Korea

## INTRODUCTION

The marine sponge family Chalinidae Gray, 1867 distributed world wide with more than 150 extant species. It belongs to one of the most difficult sponge groups in systematic studies because of the scarcity, simplicity and sometimes high variability of taxonomic characters (Weerdt, 2000). It consists of four genera, *Dendroxea*, *Chalinula*, *Cladocroce* and *Haliclona*. The genus *Haliclona* is subdivided to six subgenera (Hooper and van Soest, 2002). Among them, subgenus *Haliclona* is characterized by unispicular secondary lines. Choanosomal skeleton is regularly reticulated like ladder by uni-paucuspicular primary lines and is regularly connected by unispicular secondary lines. Choanosomal skeleton of subgenus *Reniera* consisting of a regular, unispicular, and isotropic reticulation. Spongins always present at the nodes of the spicula, but never abundant (Weerdt, 2000). Twenty five species have been reported in genus *Haliclona* from Korean waters (Kim, Rho and Sim, 1968; Kim and Sim 2004; Rho and Lee, 1976; Sim, 1981; Rho and Yang, 1983; Sim and Kim, 1988; Sim and Beyon, 1989; Sim, Kim and Kim, 1992; Sim and Lee, 1997; Sim and Kim 2002).

## MATERIALS AND METHODS

The sponges were collected by SCUBA from Uljin and Hongdo Island, Korea during 2004-2007. Specimens were fixed in 95% or 99.9% ethanol. Spicules were observed by light microscope (Carl Zeiss Axioskop II) and Scanning Electron Microscope (SEM, HITACHI S-3000N). Identification was done on the basis of external features, shape, structure of skeleton, and size and form of spicules. Thin free-hand sections were made with specimens hardened in alcohol using a surgical blade in order to observe the structure of skeleton. Spicules were prepared by dissolving a piece of sponge in sodium hypochlorite and examined with SEM (Rützler, 1978; Hooper, 1996). The holotypes are deposited in the Natural History Museum, Hannam University (HUNHM) Daejeon, Korea.

## SYSTEMATIC ACCOUNTS

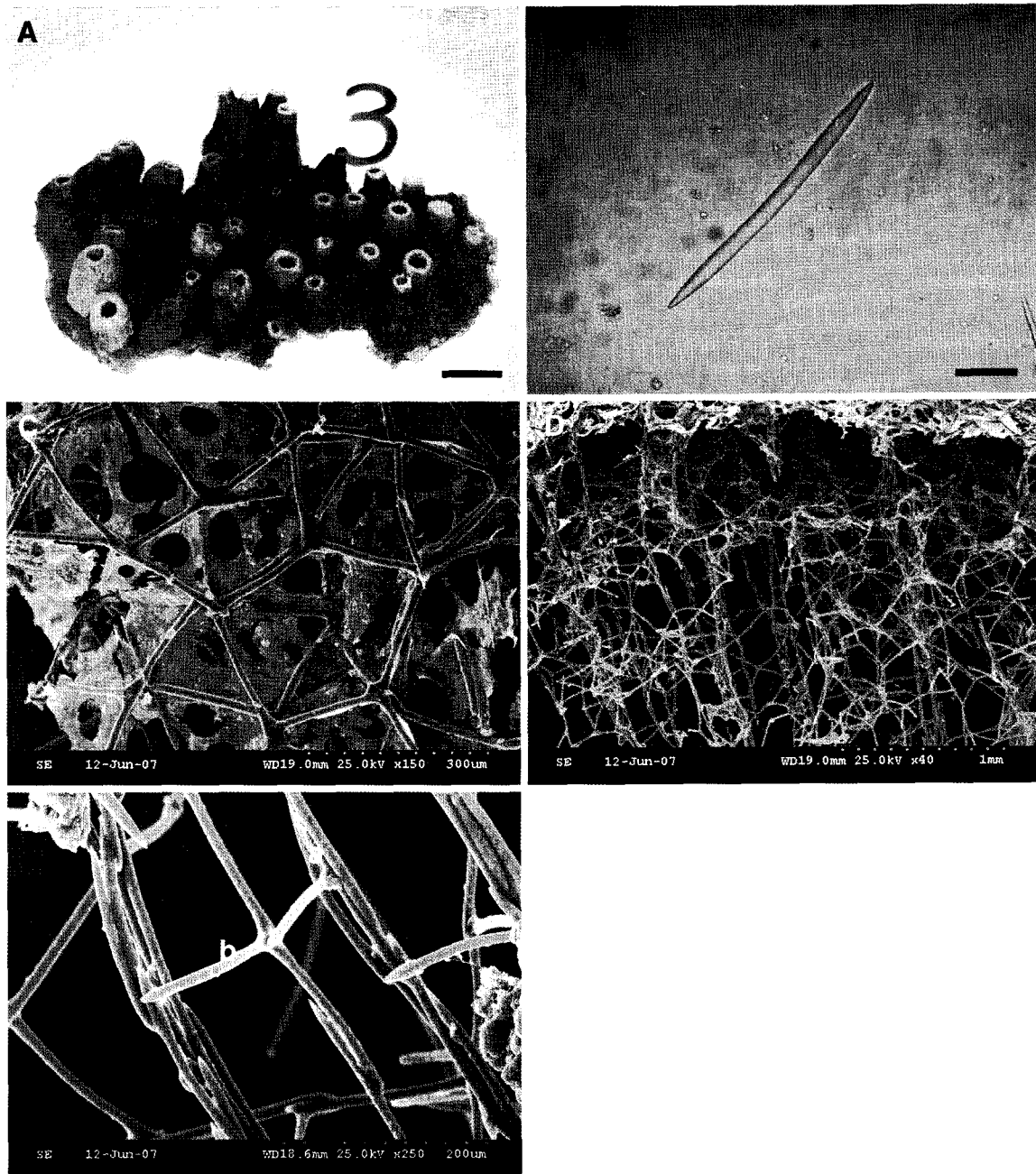
Phylum Porifera Grant, 1836  
Class Demospongiae Sollas, 1885  
Order Haplosclerida Topsent, 1928  
Suborder Haplosclerina Topsent, 1928  
Family Chalinidae Gray, 1867

<sup>1</sup>\**Haliclona* (*Haliclona*) *uljinensis* n. sp. (Fig. 1)

*Material examined.* Holotype (Por. 75), Uljin, 1 Apr. 2007,

\*To whom correspondence should be addressed  
Tel: 82-42-629-8755, Fax: 82-42-629-8751  
E-mail: cjsim@hnu.kr

<sup>1</sup>\*울진보라해면 (신청)

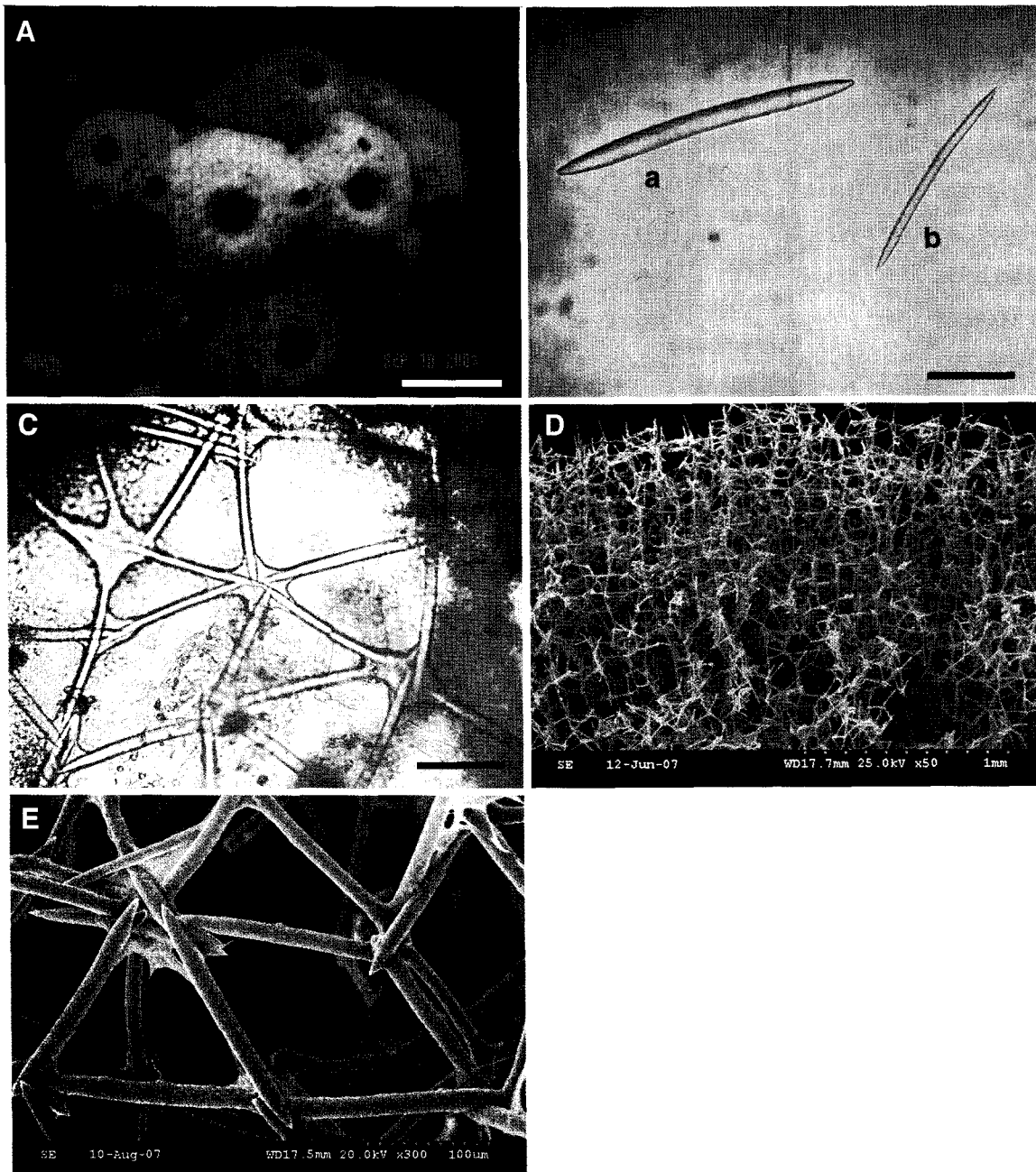


**Fig. 1.** *Haliclona (Haliclona) uljinensis* n. sp. A, entire animal; B, spicules; C, ectosomal skeleton; D, endosomal skeleton; E, endosomal skeleton [paucispicular primary lines (a), regularly connected by unispicular secondary lines (b)]. Scale bars=3 cm (A), 50  $\mu$ m (B).

SCUBA diving 20 m depth (J.R. Lee) deposited in the HUNHM, Korea.

**Description.** Thinly encrusting with numerous cylindrical tube, 1.5-2 cm high. Sized up to 15 cm wide, 10 cm high and less than 1 cm thick. Osmoles opened at top of each tube. These tubes, 0.4-0.5 cm in diameter, developed singularly,

but not agglutinated with others. Texture, soft. Colour, purple in life which gradually changes to dark ivory in alcohol. Ectosomal skeleton, tangentially reticulated and unispicular and isotropic form. Choanosomal skeleton, very regularly reticulated like ladder by uni-paucispicular primary lines and regularly connected by unispicular secondary lines. Spi-



**Fig. 2.** *Haliclona (Reniera) hongdoensis* n. sp. A, entire animal; B, spicules (a, thick oxea; b, thin oxea); C, ectosomal skeleton; D, endosomal skeleton; E, endosomal skeleton (without clear distinction between primary and secondary lines. Isotropic reticulation). Scale bars=3 cm (A), 50  $\mu$ m (B), 100  $\mu$ m (C).

cules, megascleres, oxeas. No microscleres.

*Spicules.*

*Megascleres*

Oxeas ..... 210-250  $\times$  15  $\mu$ m

*Etymology.* This species is named after the type locality, Uljin, Korea.

*Remarks.* *Haliclona (H.) uljinensis* n. sp. is closely related to *Haliclona (H.) oculata* in type of spicules. However, ectosomal skeleton of *H. (H.) uljinensis* n. sp. is reticulated and isodictyally reticulated type but *H. (H.) oculata* (Pallas, 1766) has not any dermal specialization in skeleton. The growth form of *H. (H.) uljinensis* n. sp. is thin encrusting

**Table 1.** The comparison of characters between *H. (H.) uljinensis* n. sp. and *H. (H.) oculata*.

		<i>H. (H.) oculata</i>	<i>H. (H.) uljinensis</i> n. sp.
Shape		solid branch	encrusting with numerous erect hollow cylindrical tube
Ectosomal skeleton		absent	reticulated and isodictyal reticulated type
Choanosomal skeleton	primary	regular, ladder-like reticulation uni-to paucispicular	regular, ladder-like reticulation uni-to paucispicular
	secondary	unispicular	unispicular

**Table 2.** The comparison of characters between *H. (R.) hongdoensis* n. sp. and *H. (R.) aquaeductus*.

		<i>H. (R.) aquaeductus</i>	<i>H. (R.) hongdoensis</i> n. sp.
Shape		laterally spreading massive	massive, cushion shape
Ectosomal skeleton		isotropic reticulation	isotropic reticulation
Choanosomal skeleton		rectangular, very regular, isotropic reticulation	rectangular, very regular, isotropic reticulation
Spicule (Oxeas)		145-175 × 6-8	Thick: 190-240 × 15-20 μm Thin: 130-175 × 2.5-5 μm

with numerous cylindrical tubes on the surface but *H. (H.) oculata* is solid branch form (Table 1).

<sup>1</sup>\**Haliclona (Reniera) hongdoensis* n. sp. (Fig. 2)

**Material examined.** Holotype (Por. 76), Bangueyo (Hongdo Island), 10 Sep. 2004, SCUBA diving 20 m depth (K. J. Lee and H. J. Kim) deposited in the HUNHM, Korea.

**Description.** Massive, cushion shape, and sized up to 9 cm wide, 7 cm high and 4 cm thick. Oscules, 0.3-0.7 cm in diameter, opened over entire surface. Texture, soft. Colour, purple in life which gradually changes to ivory in alcohol. Ectosomal skeleton, formed by unispicular and isotropic reticulation. Spongin appeared at node of spicule. Choanosomal skeleton, rectangular, very regular, isotropic reticulation, and without clear distinction between primary and secondary lines. Spicules, two type of megascleres, thick and thin oxeas. No microscleres.

**Spicules.**

**Megascleres**

- Thick oxeas ..... 190-240 × 15-20 μm
- Thin oxeas ..... 130-175 × 2.5-5 μm

**Etymology.** This species is named after the type locality, Hongdo Island, Korea.

**Remarks.** *Haliclona (R.) hongdoensis* n. sp. is closely related to *Haliclona (R.) aquaeductus* (Schmidt, 1862) in type of skeleton and growth form. However, oxeas of *H. (R.) hongdoensis* n. sp. are larger than *H. (R.) aquaeductus*'s (Table 2).

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<sup>1</sup>\*홍도보라해면 (신칭)

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