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Survey of Indigenous Species of Marine Algae in Korea: New Record of *Hypnea chordacea* Kützing (Gigartinales, Rhodophyta)

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Abstract

In the course of the survey of indigenous species, a red algal *Hypnea* species was collected from eastern coast of Korea. This species is distinct from other species of *Hypnea* in having percurrent and cylindrical axis, linear to lanceolate branchlets in axes except their lower portion and medullary cell walls without lenticular thickenings. This Korean entity is identified as *Hypnea chordacea* Kützing (Gigartinales, Rhodophyta) based on those features. This is the first record of *Hypnea chordacea* in Korea.

Key words: First record, *Hypnea chordacea,* Morphology, Taxonomy, Korea

Ⅰ. Introduction

Since Kang (1966), many species have been newly recorded in the Korean marine algal floristic list (Kang, 1968; Lee and Kang, 1986, 2002; Lee, 2008; Kim et al., 2013). Recently, this kind of study has been vigorously carried out in Korea (Jeong et al., 2013; Kang and Nam, 2013, 2014). It appears that about 900 species are currently reported in the Korean marine algal flora (Boo and Ko, 2012; Kim et al., 2013).

Several marine algal species were discovered in Korea during the survey of indigenous species. Of these, one red algal species, *Hypnea chordacea* Kützing (Gigartinales, Rhodophyta) which was collected from east coast of Korea, was observed in details. Morphological and taxonomic data on this species are given in the present study. This is the first record of *Hypnea chordacea* in Korea.

Ⅱ. Materials and Methods

Specimens for the present study were collected along the east coast of Korea. Taxonomic data

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were obtained from fresh, liquid-preserved and herbarium specimens. Liquid-preserved material was stored in a 10% solution of Formalin/seawater. For anatomical observations the material was cleared in 5-10% NaOH in distilled water for 2-7 days, and then rinsed in distilled water. Blades dissected from the cleared materials were hand sectioned, transferred to a slide with a drop of distilled water, and mounted in pure glycerin. In some instances, a smearing method for microscopic examination was employed. Measurements are given as width and length. For photographs the sections were stained with 0.5-1.0% aqueous methylene blue, aniline blue or hematoxylin. For permanent slides, the glycerin was exchanged with 10-20% corn syrup.

Ⅲ. Results and Discussion

***Hypnea chordacea* Kützing 1847: 776.**

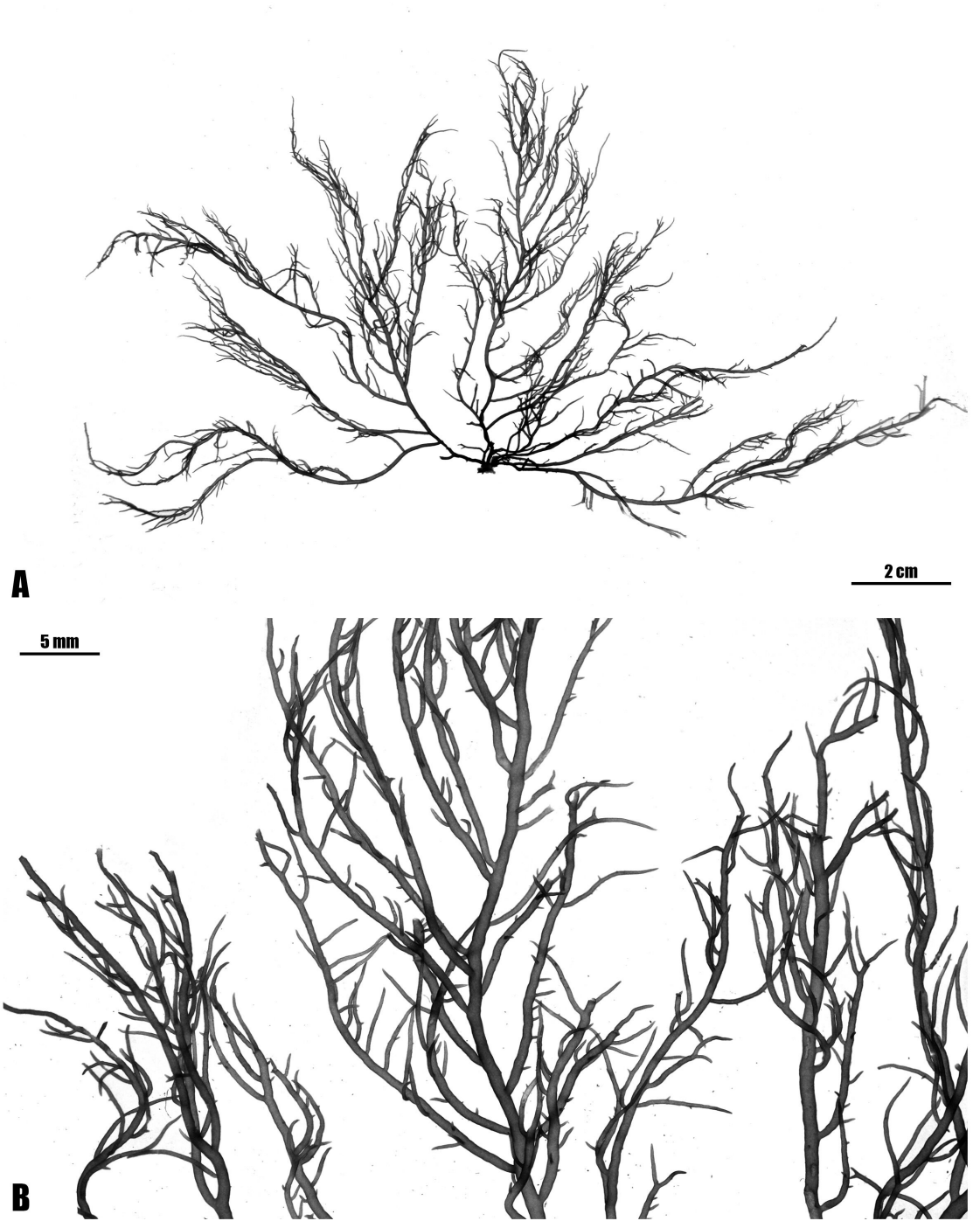
Korean name: Kkeun-ga-si-u-mu nom. nov. (신칭: 끈가시우무).

Specimens examined: PKNU 0000187710, PKNU 0000187713 (Uljin: 13.viii.2013).

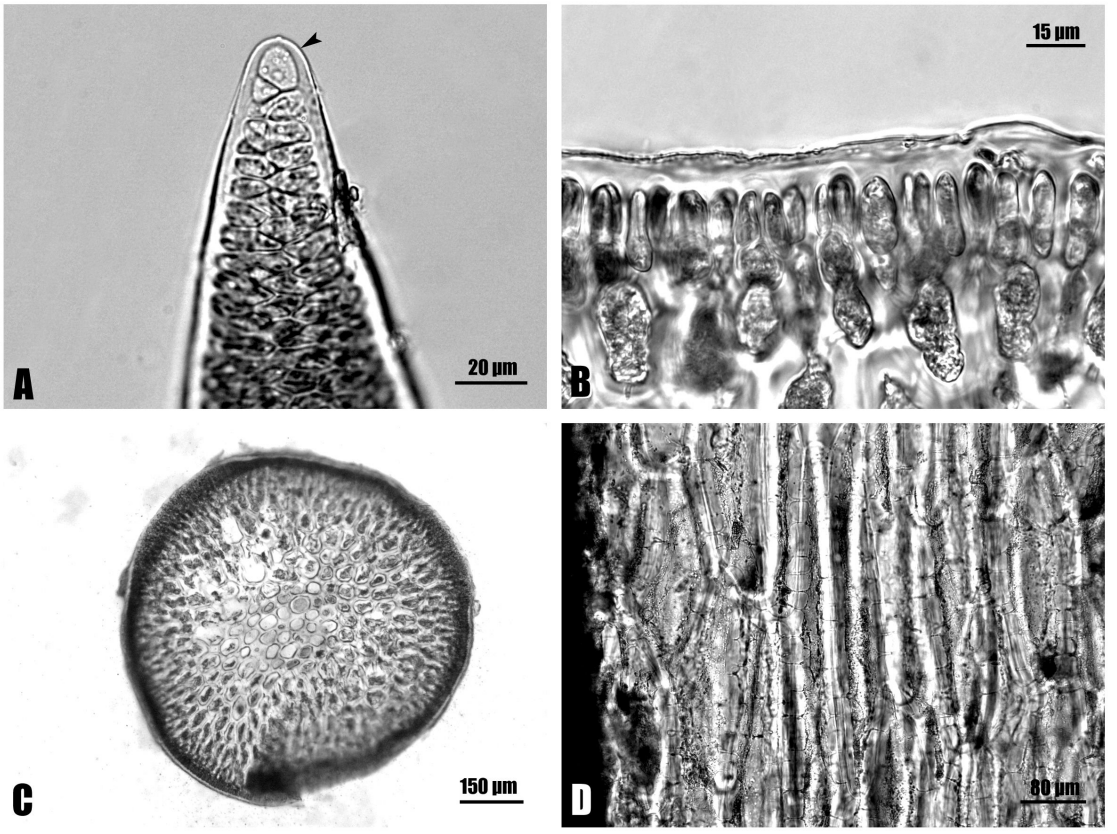
Habitat: Growing on rock near upper to lower intertidal.

Morphology: Thalli up to 5-20 cm high [Fig. 1A], terete, dark red to brown in color, cartilaginous in texture; main axes percurrent, cylindrical, issuing branches and proliferations; branches bearing branchlets in alternate to spiral manner [Fig. 1B]; branchlets linear to lanceolate, rare or naked below middle portion of axes, with distinct apical cell [Fig. 2A], 1-5 mm long; lenticular thickenings absent in the wall of medullary cells; cortex two to four cell layer thick [Fig. 2B]; medullary cells round to elliptical in transverse section [Fig. 2C], linear to cylindrical shape in longitudinal section, with many pit connection between adjacent cells [Fig. 2D]. Sexual and tetrasporangial plants were not collected during this study.

Remarks: *Hypnea chordacea* Kützing, which was originally described from Indonesia (Silva et al., 1996), is distributed in eastern Asia including Japan, China and Taiwan (Guiry and Guiry, 2015). In general, proliferations and medullary lenticular thickenings have been used as character with taxonomic value in *Hypnea* (Tseng, 1984; Chiang, 1997; Masuda et al., 1997; Xia and Wang, 1997; Geraldino et al., 2010). Proliferations in our specimens were rare or naked below middle portion of axes as described in the previous study (Xia and Wang, 1997). The medullary thickenings were also not observed as in other reports (Xia and Wang, 1997). These Korean specimens are identified as *Hypnea chordacea* based on those features. *Hypnea chordacea* is distinct from other Korean species of *Hypnea* in having percurrent and cylindrical axis, linear to lanceolate branchlets in axes except their lower portion and medullary cell walls without lenticular thickenings. This species is newly recorded in Korea, here.



[Fig. 1] *Hypnea chordacea.* A, Habit of vegetative plant; B, Details of vegetative branches covered densely with many branchlets



[Fig. 2] *Hypnea chordacea.* A, Distinct apical cell (arrowhead) at apex of branchlet; B, Cortical cell layer; C, Transverse section of branch; D, Cylindrical medullary cell with many pit connections between adjacent cells in longitudinal section of branch

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