**Scolelepis (Scolelepis) kudenovi (Polychaeta: Spionidae) new to Korea**

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A spionid polychaete, _Scolelepis (Scolelepis) kudenovi_ Hartmann-Schröder, 1981, is newly reported from Korean waters with description and illustration. _Scolelepis (Scolelepis) kudenovi_ is characterized by a combination of the following morphological features: the notopodial setae are present on the setiger 1; the occipital tentacle is absent; the branchiae are partially fused to the notopodial postsetal lamellae; the notopodial and neuropodial hooded hooks are bidentate only; the notopodial hooded hooks are present on the posterior setigers. A key to _Scolelepis_ species from Korean waters is provided in this paper.

Keywords: Korea, Polychaeta, _Scolelepis (Scolelepis) kudenovi_, Spionidae, taxonomy

INTRODUCTION

The genus _Scolelepis_ Blainville, 1828, a member of the family Spionidae Grube, 1850, is widely distributed in almost all the sediment types of deep sea as well as sand-beaches and other near-shore areas (Blake, 1996; Rocha and de Paiva, 2012). This taxon has diagnostic features such that the prostomium is pointed anteriorly and the branchiae beginning from the setiger 2 are fused to the notopodial lamellae (Zhou et al., 2009; Meißner and Götting, 2015). _Scolelepis_ species are grouped into two subgenera, _Scolelepis_ and _Parascolelepis_, by the morphology of the hooded hooks: _Scolelepis_ includes the species with uni-, bi-, or tridentate hooded hooks and _Parascolelepis_ contains those with the multidentate hooded hooks (Zhou et al., 2009; Rocha and de Paiva, 2012). To date, this genus comprises 86 valid species, and 74 species of them are belonging to the subgenus _Scolelepis_ and remaining 12 species are the components of the subgenus _Parascolelepis_ (Skorski and Pavlova, 2015).

In East Asia, 10 species of the subgenus _Scolelepis_, _S. (S.) angulata_ Zhou, 2014, _S. (S.) branchia_ Imajima, 1992, _S. (S.) daphoinos_ Zhou, Ji and Li, 2009, _S. (S.) globosa_ Wu and Chen, 1964, _S. (S.) kudenovi_ Hartmann-Schröder, 1981, _S. (S.) lefebvrei_ (Gravier, 1905), _S. (S.) lingulata_ Imajima, 1992, _S. (S.) planata_ Imajima, 1992, _S. (S.) sagittaria_ Imajima, 1992, and _S. (S.) variegata_ Imajima, 1992, and three species of the subgenus _Parascolelepis_, _S. (P.) geniculata_ Imajima, 1992, _S. (P.) texana_ Foster, 1971, and _S. (P.) yamaguchii_ (Imajima, 1959), have been recorded in Japanese and Chinese waters (Imajima, 1992; Zhou et al., 2009; Zhou, 2014). However, the genus _Scolelepis_ has been poorly studied in Korean waters and only one species, _S. (P.) yamaguchii_, is recorded from this region (Paik, 1982; 1989).

In this study, we dealt with the materials of _Scolelepis_ from Korean waters, and described a new record of _S. (S.) kudenovi_ with detailed description and illustration.

**MATERIALS AND METHODS**

Samples were collected from the muddy sand of intertidal flat. The specimens were sorted by using sieves with a pore size of 0.5 mm, fixed initially with 5% formaldehyde-seawater solution, and transferred to 85% ethyl alcohol after sorting in the laboratory. The characteristics of the whole body were observed and the appendages were dissected in a petri dish by using dissection forceps or surgical knives and needles under stereomicroscope (SMZ1500; Olympus, Tokyo, Japan). Dissected specimens were mounted on temporary slides using glycerol or permanent slides using polyvinyl lactophenol solution. Drawings were made by the stereomicroscope and light microscope (LABOPHOT-2; Nikon,
Scolelepis (Scolelepis) kudenovi Hartmann-Schröder, 1981

Korea, 5 specimens, Gyema-ri, Hongnong-eup, Yeonggwang-gun, Jeollanam-do (26°26′14″E, 35°23′27″N), 2 Apr 2015, muddy sand, collected from intertidal soft-bottoms using a sieve (pore size 0.5 mm).

Description. Body slender, about 8.0 mm long in incomplete specimens and width about 1.0 mm at anterior region including parapodia.

Prostomium conical-shaped, elongated and tapered anteriorly; caruncle extending to setiger 1 with distinct protuberance posteriorly; 2 pair of eyespots arranged in transverse row. Occipital tentacle absent. Palps paired, reaching to about setigers 10-23. Peristomium distinct from setiger 1, forming lateral wings on each sides (Fig. 1A, B).

First setiger without branchiae, but with conical-shaped notopodial and neuropodial presetal lamellae; notopodial lamellae slightly longer than neuropodial ones (Fig. 1C).

Branchiae elongate and tapered into pointed tip, presented from setiger 2, and continued until posterior end (Fig. 1D-G).

Notopodial postsetal lamellae on anterior and median setigers partially fused to branchiae; pointed tips of lamellae separated from branchiae. Notopodial postsetal lamellae on posterior setigers almost separated from branchiae, becoming gradually smaller, and elongate ventrally. Notopodial presetal lobes low and rounded. Neuropodial postsetal lamellae low and rounded, divided into interramal and ventral lamellae from median and posterior setigers; interramal lamellae low and rounded, with elongate tips dorsally, and ventral lamellae increasing transverse length (Fig. 1D-G).

Anterior setigers with limbate capillary only, arranged in 2 transverse rows. Notopodial hooded hooks bidentate with open hoods, composed of 2-4 hooks per fascicle, presented on posterior setigers. Notopodial capillary setae slender, presented on posterior setigers. Neuropodial hooded hooks bidentate with open hoods, composed of 5-12 hooks per fascicle, and presented from setigers 30-33. Neuropodial capillary setae slender, presented on setigers bearing neuropodial hooded hooks (Fig. 1H-M).

Remarks. The present species, Scolelepis (Scolelepis) kudenovi Hartmann-Schröder, 1981, has been described from Australian and Japanese waters based on the following distinctive features: the notopodial setae are present on the setiger 1; the occipital tentacle is absent; the branchiae are partially fused to the notopodial postsetal lamellae; the notopodial and neuropodial hooded hooks are bidentate only; the notopodial hooded hooks are present on the posterior setigers (Hartmann-Schröder, 1981; Imajima, 1992; Meißen and Göting, 2015). In this respect, Korean materials of Scolelepis generally agree well with the previous descriptions of S. (S.) kudenovi (Hartmann-Schröder, 1981; Imajima, 1992; Meißen and Göting, 2015).

Meißen and Göting (2015) described some differences between Australian and Japanese materials of S. (S.) kudenovi in the morphology of the prostomium and the beginning setigers of the neuropodial and notopodial hooks. Korean materials of the present study are very similar to Japanese materials in these characters. So, it is believed that at least two different regional groups, Australian and Far Eastern groups, are existed in S. (S.) kudenovi: Australian group has anteriorly trifid prostomium (vs. anteriorly long and pointed one in Far Eastern group), the neuropodial hooks beginning from about the setigers 8-38 vs. 26-33; and the notopodial hooks from about the setiger 98 vs. the setigers 55-62 (Imajima, 1992; Meißen and Göting, 2015). However, the taxonomic value of these differences between regional groups are still in need of further detailed study because those can belong to intraspecific variability as mentioned by Meißen and Göting (2015).

Among Scolelepis species reported from East Asia, S. (S.) kudenovi resembles S. (S.) daphoinos Zhou, Ji and Li, 2009 and S. (S.) lefebvrei (Gravier, 1905) in having the setiger 1 with notopodial setae, the partially fused branchiae to the notopodial lamellae, and the absence of the occipital tentacles. However, the former species is easily distinguishable from latter two species by the presence of the indistinct pigmented pattern on the prostomium and the dorsal of anterior body (vs. distinct reddish pigment patches in S. (S.) daphoinos) and the bidentate hooded hooks (vs. unidentate ones in S. (S.) lefebvrei) (Imajima, 1992; Zhou et al., 2009).

Habitat. Japanese materials were collected from the subtidal zone (depth 45 m), but Australian materials were distributed in the fine sand of intertidal zone (Imajima, 1992, Meißen and Göting, 2015). In Korean waters,
Fig. 1. *Scolelepis* (Scolelepis) *kudenovi* Hartmann-Schröder, 1981. A, dorsal view of anterior end; B, lateral view of anterior end; C, anterior view of first setiger; D, anterior view of setiger 12; E, anterior view of setiger 42; F, anterior view of setiger 58; G, anterior view of posterior setiger; H, notopodial hooded hook; I, neuropodial hooded hook; J, neuropodial capillary seta of setiger 12; K, notopodial seta in posterior row of setiger 42; L, neuropodial seta in anterior row of setiger 42; M, neuropodial companion seta of posterior setiger. Scale bars: A, B = 0.5 mm, C-G = 0.2 mm, H-M = 0.05 mm.
our materials were found from the muddy sand of intertidal zone.

**Distribution.** Australia, Japan, Korea.

**Depository.** NIBRIV0000325701, NIBRIV0000325702.

**Key to the species of Scolelepis Blainville, 1828 from Korea**

1. Hooded hooks bidentate with straight shaft
   - Hooded hooks multidentate with curved shaft

   
   
   
   - S. (Scolelepis) kudenovi
   - S. (Parascolelepis) yamaguchii

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**References**

Blake, J.A. 1996. Family Spionidae Grube, 1850, including a review of the genera and species from California and a revision of the genus Polydora Bosc, 1802. In: J.A. Blake, B. Hilbig and P.V. Scott (eds.), Taxonomic atlas of the benthic fauna of the Santa Maria Basin and Western Santa Barbara, Part 3. Santa Barbara Museum of Natural History, Santa Barbara, California. pp. 81-223.

Hartmann-Schröder, G. 1981. Zur Kenntnis des Eulitorals der australischen Kusten unter besonderer Berucksichtigung der Polychaeten und Ostracoden. Teil 6. Die Polychaeten der tropisch-subtropischen Westkuste Australiens (zwischen Exmouth im Norden und Cervantes im Süden). Mitt. Hamb. Zool. Mus. Inst. 78:19-96.

Imajima, M. 1992. Spionidae (Annelida, Polychaeta) from Japan. VIII. The genus Scolelepis. Bull. Nat. Sci. Mus. 18:1-34.

Meißner, K. and M. Götting. 2015. Spionidae (Annelida: ‘Polychaeta’: Canalipalpata) from Lizard Island, Great Barrier Reef, Australia: the genera Malacoceros, Scolelepis, Spio, Microspio, and Spiophanes. Zootaxa 4019:378-413.

Paik, E.I. 1982. Taxonomic studies on polychaetous annelids in Korea. Res. Bull. Hyosung Women’s Coll. 24:745-913.

Paik, E.I. 1989. Illustrated Encyclopedia of Fauna and Flora of Korea. Vol. 32. Polychaeta. Ministry of Education Press, Seoul.

Rocha, M.B. and P.C. de Paiva. 2012. Scolelepis (Polychaeta: Spionidae) from the Brazilian coast with a diagnosis of the genus. Zoologia 29:385-393.

Sikorski, A.V. and L.V. Pavlova. 2015. New species of Scolelepis (Polychaeta, Spionidae) from the Norwegian coast and Barents Sea with a brief review of the genus. Fauna Norv. 35:9-19.

Zhou, J. 2014. A new species of Scolelepis (Polychaeta: Spi- onidae) from Chinese seas. Raff. Bull. Zool. 62:490-495.

Zhou, J., W. Ji and X. Li. 2009. A new species of Scolelepis (Polychaeta: Spionidae) from sandy beaches in China, with a review of Chinese Scolelepis species. Zootaxa 2236:37-49.

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