

## First Report on *Hirsutella subulata*, a Pathogen of Rice Stem Borer, *Chilo suppressalis* in Korea

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### 국내 미기록 이화명충 병원사상균(*Hirsutella subulata*)에 관한 보고

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**ABSTRACT:** *Hirsutella subulata* (Hyphomycetes) was observed for the first time on diseased larvae of *Chilo suppressalis* in Korea. This fungus formed slender and slightly attenuated synnemata consisting of closely bound, longitudinal hyphae on the insect larvae. Typical characteristics of this species are ellipsoid or broadly obovoid phialides with slender, needle-like necks and asymmetric conidia. It is very similar to *H. barberi* but can be distinguished by its asymmetrical conidia.

**KEYWORDS:** Entomopathogenic fungus, *Hirsutella subulata*, *Chilo suppressalis*

The genus *Hirsutella* (Hyphomycetes) is a large and variable group of fungi including both mononematous and synnema-forming species (Minter and Brady, 1980; Samson *et al.*, 1980). This genus is characterized by subulate to abruptly tapering phialides bearing one- to two-celled conidia with or without mucus (Evans and Samson, 1982, 1984). Members of this genus attack a wide variety of insects and mites, and thus have received much attention for their potential use as biological control agents. One species of this genus, *H. thompsonii* Fisher, is already in successful use against the citrus rust mite, *Phyllocoptruta oleivora* (Ashm.), in Florida (McCoy and Couch, 1979). However, little is known on occurrence of the *Hirsutella* species parasitic to lepidopteran insects and mites in Korea. The present paper describes and illustrates *H. subulata* Petch, first observed in Korea.

*Hirsutella subulata* Petch, *The Naturalist* 1932: 48 (Figs. 5, 17).

Larvae rarely covered with mycelia; synnemata arising from the larvae, caespitose, slender, terete, slightly attenuated upward approximately 12~17 mm long, 0.1~0.3 mm thick, light brown to gray, simple, composed of closely bound, parallel, longitudinal hyphae 2~4  $\mu\text{m}$  wide; phialides scattered, projecting as lateral cells or occasionally as terminal cells of the outer hyphae of the synnemata or from the

hyphae of the mycelium, the lower portions narrowly ellipsoid or broadly obovoid, 4~8  $\mu\text{m}$   $\times$  3~5  $\mu\text{m}$ , abruptly narrowing above into one or two very slender, needle-like necks (rarely undulated) 6~8  $\mu\text{m}$  long; conidia narrowly ellipsoid, often slightly asymmetric, more convex on one side than the opposite, 3.5~5  $\mu\text{m}$   $\times$  2.0  $\mu\text{m}$ , droplets of mucus not observed.

**Habitat:** on larvae of *Chilo suppressalis* Walker (Lepidoptera) in rice stem.

**Specimens examined:** CS99-1~5 (21 I 1999, Taean, Chungnam).

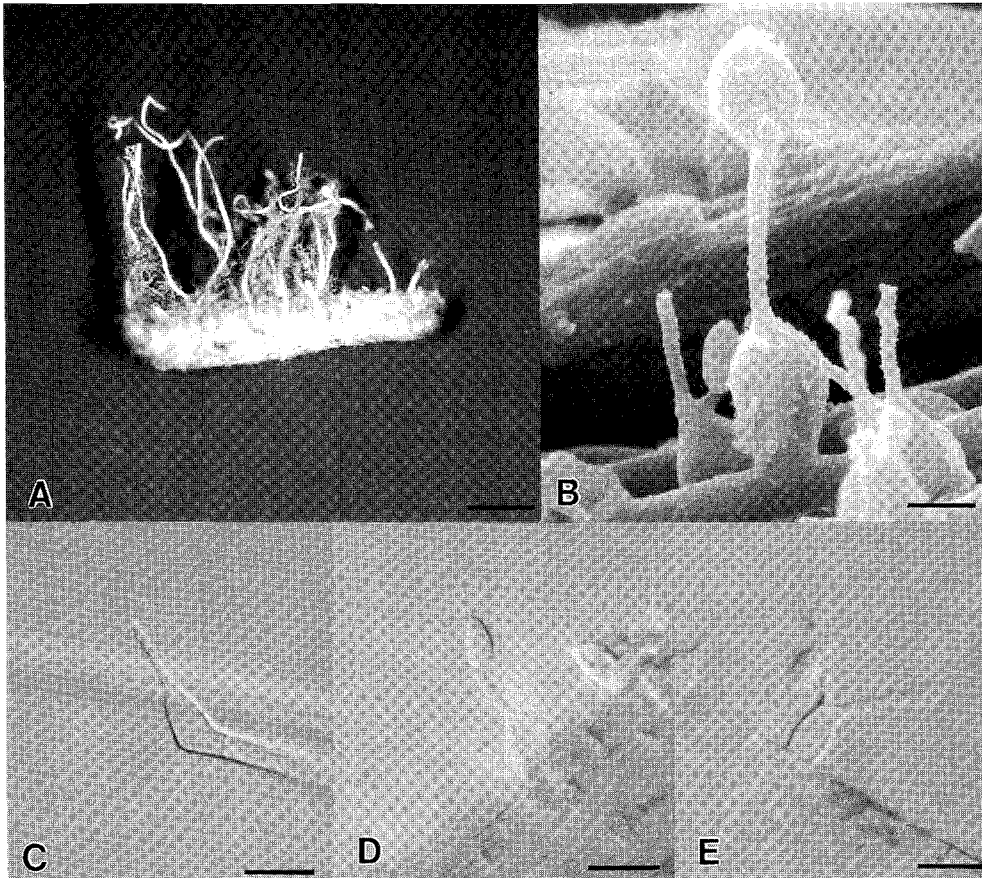
**Host:** *Carpocapsa pomonella*, *Apatela dactylina*, *Aegeria pyri*, *Pyrausta nubilalis*, *Conopia* (*Synnanthedon*) *pyri*.

**Notes:** This species is a fairly common pathogen of the codling moth, *C. pomonella* in U.S.A. (Mains, 1951) but its occurrence on the rice stem borer, *C. suppressalis* has never been reported. An ascogenous stage of this species has not been observed. It has a very close relationship with *H. barberi* (Giard) Petch in morphology. Its asymmetric conidia (Mains, 1951) are only distinctive from *H. barberi*. A comprehensive study is needed for a clear taxonomic relationship of the two species.

### 적 요

국내 미기록 곤충병원사상균, *Hirsutella subulata*를 벗 짚 내의 이병된 나비목의 이화명충(*Chilo suppressalis*)에서 발견하였다. 이 균은 유충 표면에서 여러 개의 분생자

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**Fig. 1.** (A) Synnemata on a rice stem borer (*Chilo suppressalis*). Bar = 0.3 cm. (B) A phialide with a slender, needle-like neck and ellipsoidal conidium. Bar = 2.7  $\mu$ m. (C) A phialide arising as terminal cell of the outer hyphae of the synnemata. Bar = 10  $\mu$ m. (D) A phialide projecting as lateral cell of the outer hyphae of the synnemata and asymmetric conidium. Bar = 10  $\mu$ m. (E) A phialide with two necks. Bar = 10  $\mu$ m.

경속(synnemata)과 그 표면에 가늘고 긴 목을 지닌 반근봉 모양의 경자(phialide)를 형성하며, 분생포자의 모양은 비대칭형으로 한쪽 면이 둥근 특징을 지니고 있다. 이 균은 *H. barberi*와 형태적으로 매우 유사하나, 분생자의 형태로 구분이 가능하다.

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