

***Entomophthora planchoniana* Cornu (Zygomycetes: Entomophthoraceae),
the First Observed Pathogen of the Green Peach Aphid
Myzus persicae in Korea**

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**복숭아혹진딧물에서 발견된 국내 미기록 곤충병원성 곰팡이
*Entomophthora planchoniana*에 관한 보고**

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ABSTRACT: An entomophthoraceous fungus, *Entomophthora planchoniana*, was found in populations of the green peach aphid, *Myzus persicae*, at Kunsan city on June 2, 1998. Occurrence of this species has never been recorded in Korea. Microscopic observations of this fungus are described, and illustrated. Unique characters are that it forms unitunicate muscae-like conidia with 4-6 nuclei, and is the only *Entomophthora* species which can attack aphids.

KEYWORDS: Entomophthoraceous fungus, *Entomophthora planchoniana*, Green peach aphid

An infectious disease affecting green peach aphid, *Myzus persicae* Sulzer, was encountered on mallow at Kunsan city on June 2, 1998. Numerous aphid cadavers were found hanging to leaves. A close observation revealed an entomophthoraceous mycosis in the dead aphids. Dead aphids were brought to the laboratory on mallow leaves. They were prepared for microscopic examination on glass slides in a drop of lactophenol or aceto-orcein by heating them gently. The entomophthoraceous fungus was identified on the basis of anamorphic characteristics.

Our microscopic examination identified the fungus as *Entomophthora planchoniana* Cornu (Zygomycetes: Entomophthorales) which has

never been recorded in Korea. In the genus *Entomophthora*, this fungus is the only species which can attack aphids (Ben-Ze'ev and Uziel, 1979). The shape and dimensions of the different organs or structures appearing in our specimen from *M. persicae* were in good accord with descriptions of those described by Ben-Ze'ev and Kenneth (1982) and MacLeod *et al.* (1976). In particular, size of the primary conidia was perfectly matched with that described by Byford and Reeve (1969). This species has never been cultivated *in vitro* (Gustafsson, 1965), and no attempt was made to isolate it in this study. Herein, anamorphic characteristics of the fungus, first observed in Korea, were described in details on the basis of the collected specimen.

In vivo-infected specimens were covered

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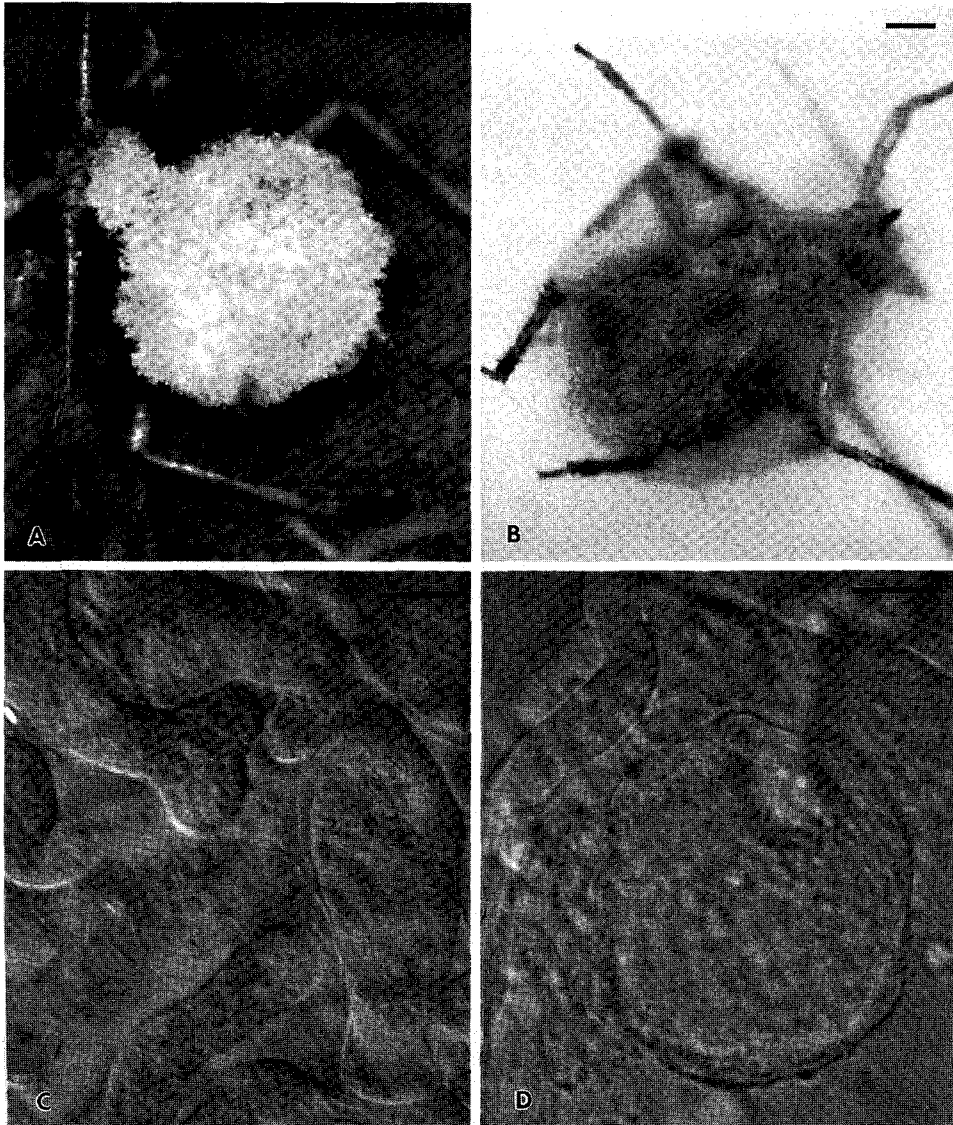


Fig. 1. (A) Vegetative stages and sporulating structures on the green peach aphid killed by *Entomophthora planchoniana*. Bar=200 μ m. (B) Pseudorhizomorphs outgrown from the abdomen, ending in a sucker-like pad. Bar=200 μ m. (C) Short and thick hyphal bodies. Bar=10 μ m. (D) Spherical resting spore. Bar=10 μ m.

with very dense and profuse pale brown outgrowths (Fig. 1A). Rhizoids are present, consisting of one or more pseudorhizomorphs each ending in a sucker-like pad usually outgrowing from the abdomen (Fig. 1B). The hyphal bodies are short and thick (Fig. 1C). Resting spores are azygospores and spherical (Fig. 1D). Conidiophores are unicellular,

simple and usually clavate (Fig. 2A). Primary conidia are oval (muscae-type) with a broad basal papilla, and a slight point opposite, unitunicate, and paucinucleate (4-6 nuclei) (Fig. 2B). The primary conidia are actively discharged in the pattern of conidiophore-cannon, together with some protoplasm from the tip of the conidiophore, and consequently

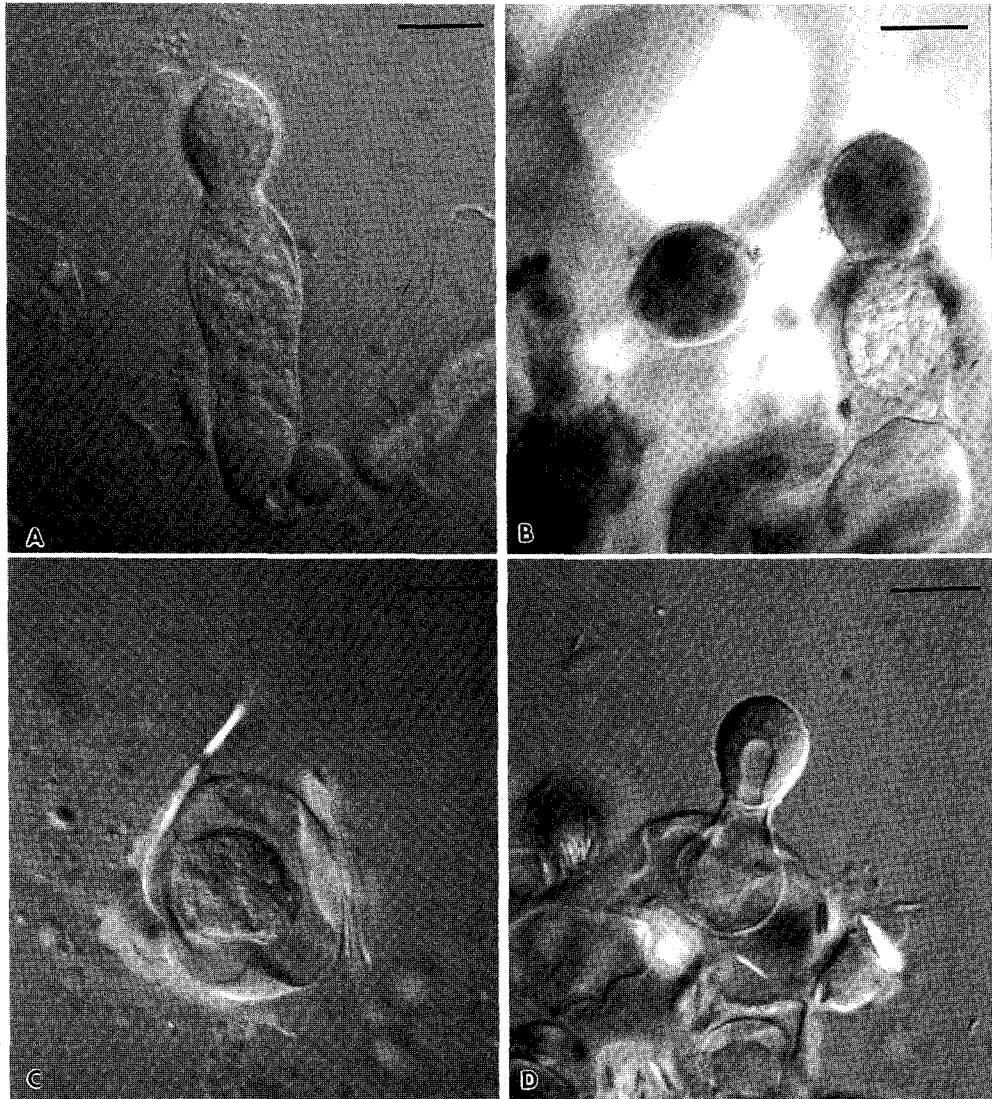


Fig. 2. (A) Unicellular, simple and clavate conidiophore producing primary conidium. (B) Aceto-orcein-stained primary conidia with 4-6 nuclei. (C) Primary conidium with a protoplasmic coating after forcible discharge. (D) Secondary conidium formed laterally from the primary conidium. Bars in all figures=10 μm .

often appear surrounded by a protoplasmic coating (Fig. 2C): these conidia measure 14-21 $\mu\text{m} \times 11-17 \mu\text{m}$ (averaging 17.17 $\mu\text{m} \times 13.78 \mu\text{m}$). Secondary conidia (13-18 $\mu\text{m} \times 10-14 \mu\text{m}$) form laterally, and are slightly smaller and rounded than the primary conidia (Fig. 2D). Cystidia are rare, and narrower and longer than the conidiophore.

In the light of these observations, *E. plan-*

choniana is the first observed *Entomophthora* species occurring on aphids in Korea. Because it attacks many genera of Aphididae and small Diptera (MacLeod *et al.*, 1976), it has the potential to use as a biological control agent. Unique characters of the *E. planchoniana* are its muscae-like conidia with 4-6 nuclei and its infectivity to aphids.

적 요

국내 미기록 곤충병원성 곰팡이, *Entomophthora planchoniana*를 1998년 6월 2일 전북 군산 아욱 재배지의 복숭아혹진딧물에서 발견하였다. 이에 국내에서 처음으로 *E. planchoniana*를 보고하며, 형태적 특징을 기재한다. 또한 이 균의 가장 중요한 분류학적 특징은 *Entomophthora*속 곰팡이 중 진딧물에 기생하는 유일한 종이며, 1차포자는 4~6개의 핵을 지닌 종모양 이었으며 원형질로 감싸져 있었다.

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