

Two *Helvella* species new to Taiwan

Chien-Ming Chen¹ and Yei-Zeng Wang²

¹Taiwan Endemic Species Research Institute, Chichi, Nantou, Taiwan

²National Museum of Natural Science, Taichung, Taiwan

Abstract

Two species of *Helvella* are described as new records to Taiwan. They are *Helvella crispa* Scop.: Fr. and *Helvella atra* Holmskj.: Fr.

Key words: *Helvella*, discomycetes, Taiwan

Received : November 2, 1999

Accepted January 19, 2000

Introduction

In the survey of larger fungi in central Taiwan, the authors came across two interesting *Helvella* species of operculate discomycetes. For *Helvella* species in Taiwan, *Helvella infula* Schaeffer was first recorded by Chen and Chien (1983), but they did not describe the texture of excipulum and ascospores containing two oil drops. Based on the size, shape of mature spores, and the degree to which the perispore protrudes beyond the spore ends proposed by Harmaja (1969), the description and the spore figures of *H. infula* collected from Mt. Ah-Li was turned out to be *Gyromitra ambigua* (Karst.) Harmaja.

The species of *Helvella* are distinguishable each other largely on the bases of the size, color, shape and configuration of the stipe and pileus

(Anderson & Ickis 1921). Dissing (1966) disposed the species of *Helvella* in seven sections. Abbott and Currah (1988) additionally proposed Section *Silvicolae* to accommodate the species *Helvella silvicola* (Beck apud Sacc.) Diss. In this paper, we describe two new records *Helvella crispa* Scop.: Fr. and *Helvella atra* Holmskj.: Fr. in Taiwan.

Materials and Methods

The morphology of ascomata collected from Nantou was examined under a dissecting microscope. After it was dried in circulating air at 40°C, it was deposited in the herbaria of the National Museum of Natural Science and Taiwan Endemic Species Research Institute. The slide specimens were made from its free-hand sections and squash preparations, in which some of the specimens were rehydrated in 3%



Figs. 1 & 2. Apothecia. **Fig. 1.** *Helvella crispa*.



Fig. 2. *Helvella atra*.

KOH solution, and then mounted in lactophenol cotton blue and Melzer's reagent, respectively. For ultrastructural observation, the dry specimens were fixed on specimen stubs with colloidal tape, sputter-coated with gold-palladium, and examined under a Topcon ABT-150S Scanning Electron Microscope.

Results and Discussion

Helvella crispa Scop.: Fr., Syst. Myc. 2: 14. 1823. Figs. 1, 3 & 5.

Pileus 3-4 cm broad, saddle-shaped with 2 or 3 lobes to irregularly convoluted in the center, margins appressed to the stipe then expanded; hymenium ivory to cream colored, pale to medium ochraceous when dried, rugulose over the disc; undersurface darker than hymenium when fresh, pale ochraceous when dried,

pruinose and briefly ribbed near the stipe apex. Stipe enlarging downward to subclavate, 4-7 cm long, 5-10 mm broad at the apex, whitish or obscurely tinged with gray at the base, pale cream colored when dried, hollow, surface deeply lacunose, ribs angular to acute.

Asci eight-spored, cylindrical, 255-290 x 16-19 μm , Jain Melzer's reagent. Ascospores 20-24 x 13-15 μm , oblong-elliptic, with 1 central oil globule, walls smooth (Fig. 3), slightly thickened. Paraphyses 9-10 μm broad above, hyaline with a yellow refractive content in Melzer's, medium to pale blue in cotton blue, apical cell longer than 100 μm .

Medullary excipulum 300-490 μm broad, textura intricata, colorless, hyphae 3-4.5 (-6) μm broad; ectal excipulum 150-275 μm broad, textura angularis, colorless, outermost cells catenuliform in long fascicled tufts, nearly colorless, evenly blue in cotton blue, endocells cylindrical to subclavate, 20-43 x 9-15 μm ,

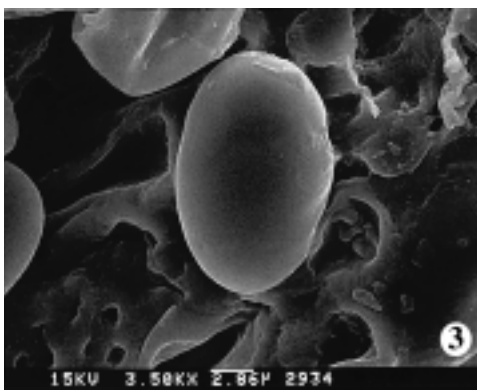


Fig. 3. Scanning electron micrograph of the ascospore: *Helvella crispa*.

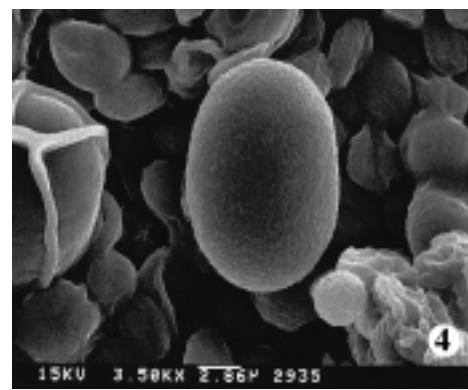


Fig. 4. Scanning electron micrograph of the ascospore: *Helvella atra*.

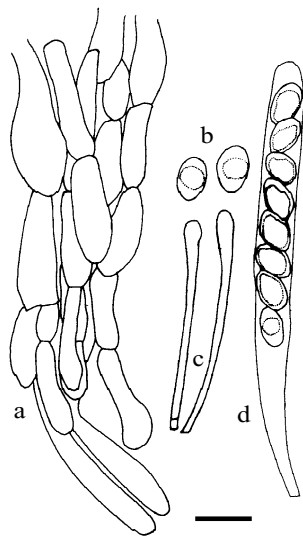


Fig. 5. *Helvella crispa*. a. the tuft of fascicled hyphae. b. ascospores. c. paraphyses tips. d. ascus. Bar = 30 μ m.

walls slightly thickened. Stipe surface similar to pileus ectal excipulum.

Of the genus *Helvella* section, *Helvella* Dissing with stipe longitudinally sulcate-costate is the oldest and well known. It is typified by the common species *H. crispa* and *H. lacunosa* Afz.: Fr. But the latter is greyish brown, and its head is more lobed than saddle-shaped. Dissing (1966) noted that this species has a northern distribution range near the latitude of 60-62°N, but he did not mention the southern range. The specimens were found in the area of 23-24°N at the altitude of 1,700m. In Taiwan this species collected in this study grows gregariously on fine ground near paths and in open areas of woodlands. It is found in winter, but more frequently in autumn.

Locality: Nantou, Tataka, alt. 1,700m, Dec. 30,

1998. C. M. Chen 2305.

Distribution: Taiwan, Japan, North America, Switzerland, Europe.

Helvella atra Holmskj.: Fr., Syst. Myc. 2:19. 1823. Figs. 2, 4 & 6

= *Leptopodia atra* (Holmskj.: Fr.) Boud., fide Dissing, 1966.

Pileus firm, smooth, reflexed, compressed-saddle-shaped, with the opposite drooping margins at first adnate with the stipe, 1-2.5 cm broad, smoke-gray to fuliginous above and below, lower surface smooth and velvety or scurfy-villose. Stipe smooth and terete, unevenly undulate, flattened, with some lacunae, especially toward the base but never sulcate-

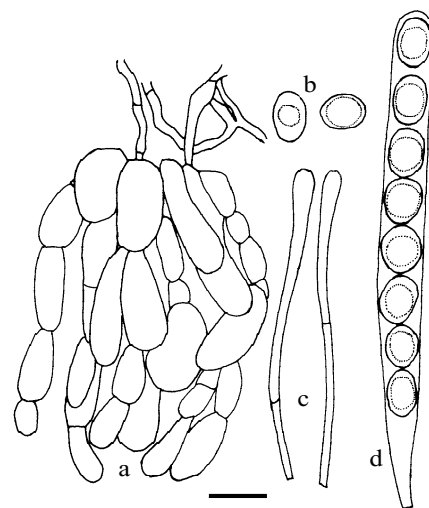


Fig. 6. *Helvella atra*. a. outermost cells of ectal excipulum. b. ascospores. c. paraphyses tips. d. ascus. Bar = 30 μ m.