

FIRST RECORD OF GENUS *COELOMOMYCES* IN MACAU (CHINA): *COELOMOMYCES STEGOMYIAE* VAR. *STEGOMYIAE* PARASITIZING *Aedes albopictus*

HELENA C. RAMOS,¹ H. RIBEIRO,² TERESA NOVO,^{2,3}
J. BIZARRO² AND E. R. EASTON⁴

ABSTRACT. During a mosquito survey carried out in 1994-95, in Macau, southern China, *Coelomomyces stegomyiae* var. *stegomyiae* was found parasitizing *Aedes albopictus*. This constitutes the first record of this genus as potential agents of mosquito control in the area.

In the course of the identification of the larvae collected during a mosquito survey carried out in Macau, a small territory in the Pearl's River estuary under Portuguese administration, one larva of *Aedes albopictus* (Skuse) was found packed with sporangia and hyphae (Figs. 1A, 1B, 1C) of a species of the genus *Coelomomyces* (Keilin, 1921), a genus of parasitic fungi not yet recorded in Macau nor, as far as we know, in the nearby Territory of Hong Kong.

The sole parasitized specimen was collected by 2 of us (T. Novo and J. Bizarro) along with other 18 apparently uninfected larvae from the small body of rainwater in a vase with an ornamental plant in the Park Siac Pai Van, Coloane Island, on September 29, 1995.

That this is a rare parasite in Macau was shown not only by the relatively low infection rate (5.3%), but also because this was the only breeding place positive for *Coelomomyces* among 127 *Ae. albopictus* larval biotopes and more than 700 *Ae. albopictus* larvae examined all over the territory, including the Macau peninsula and the islands of Taipa and Coloane.

However, given the good condition of the infected larva mounted on a slide in polyvinyl-chloral-formo-phenol, a solidifiable mounting medium currently used in our laboratory (Ribeiro, 1962), it was possible to examine all the main taxonomic characters used in the identification of the species of *Coelomomyces* (Couch and Bland 1985). In the case of our larva, these may be summarized as follows (Fig. 1). Resting sporangia (RS) ellipsoid, 24-31 × 40-50 μm (means and standard deviations from 71 sporan-

gia: 28.4 ± 1.7 by 45 ± 2.4 μm). Sporangial surface (Figs. 1D, 1E) ornamented with small scattered punctae, about 1-5 μm apart, apparently with depressed margins, extending into the poles (Fig. 1E), among which very small papillae, about 0.5-11 μm, are discernible under Nomarsky's differential interference contrast microscopy, with 100× objective. Surface without ridges or any other kind of ornamentation. Sporangial wall (Figs. 1F, 1G) from about 1.5 to 5 μm thick, internal structure showing funnel-shaped pits corresponding to the superficial punctae, with a very fine striation between them. Dehiscence slit appearing as a very delicate line, either in face view, dorsal side (Fig. 1H) or in end view (Figs. 1I, 1J). A mature sporangium already in the process of dehiscence ("go" stage) was observed (Fig. 1J). Hyphae as in Fig. 1C, about 2-11 μm thick. Thin-walled sporangia were not observed.

These being the characters of our *Coelomomyces*, we arrived at the conclusion that we are dealing with *C. stegomyiae* var. *stegomyiae* Keilin, 1921. The ornamentation of the sporangium surface shows that it belongs to group III of Bland and Couch (1973), along with 6 other species and varieties: *C. keilini*, *C. ponticulus*, *C. psorophorae* var. *psorophorae*, *C. psorophorae* var. *halophilus*, *C. psorophorae* var. *tasmaniensis*, and *C. stegomyiae* var. *chapmani*.

Coelomomyces keilini, known only from the type specimen from Georgia, USA, has more elongated resting sporangia with "slitlike" or "starlike" punctae more densely distributed over the sporangial surface (Couch and Dodge 1947). This is also the case with all the other forms, excepting the varieties of *C. stegomyiae*. Additionally, the sporangial surface of *C. ponticulus*, described from Japan (Nolan and Mogi 1980) has elongated punctae with a small central bridge, whereas the Holarctic *C. psorophorae* var. *psorophorae* and the Australian *C. psorophorae* var. *tasmaniensis* also have larger sporangia and the RS of *C. psorophorae* var. *halophilus*, apparently a strictly brackish water parasite, are somewhat differently shaped and have

¹ Departamento de Biodiversidade, Instituto de Investigação Científica Tropical, Junqueira 14, 1300 Lisboa, Portugal.

² Departamento de Entomologia Médica and Unidade de Parasitologia e Microbiologia Médicas, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Junqueira 96, 1300 Lisboa, Portugal.

³ Fundação Oriente, Salitre 66-68, 1200 Lisboa, Portugal.

⁴ Centro dos Estudos Pré-Universitários, Universidade de Macau, C.P. 3001, Macau.

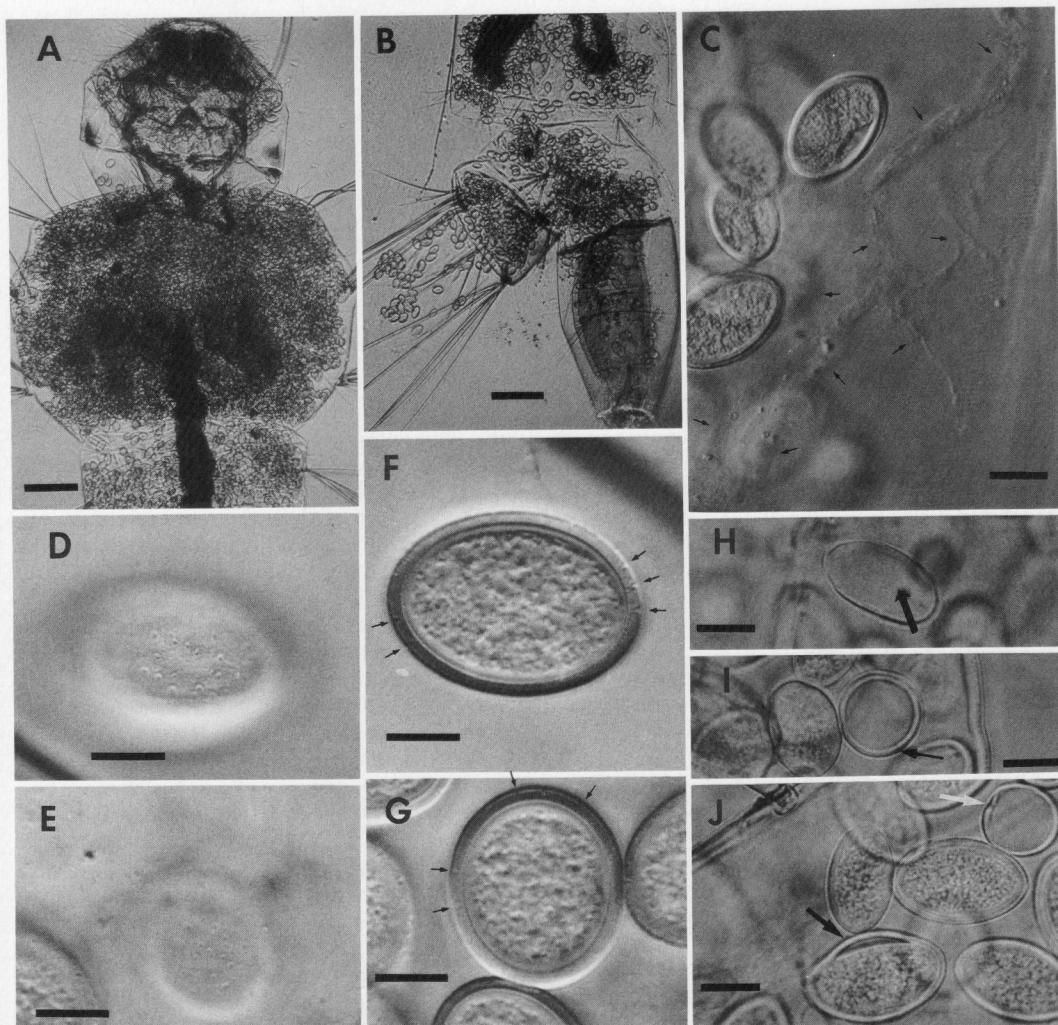


Fig. 1. A–J. *Coelomomyces stegomyiae* var. *stegomyiae* in *Aedes albopictus*, Coloane Island, Macau. A. Head, thorax, and first abdominal segment of larva packed with resting sporangia (RS). B. Last abdominal segments of the infected larva. C. Hyphae (arrows). D. Sporangial surface, side view, showing small punctae and very small papillae. E. Sporangial surface, end view, showing the same ornamentation. F. RS midoptical section, side view, showing very fine striation and funnel-shaped pits in the sporangial wall (arrows). G. RS section, end view. H. RS surface view, dorsal side, showing dehiscence slit (arrow). I. RS midoptical section, end view, showing dehiscence slit (arrow). J. Another dehiscence slit in end view (white arrow), and a mature sporangium in the “go” stage of dehiscence (black arrow). A, B, and H–J under brightfield microscopy; D–G under Nomarsky’s differential interference contrast microscopy. Bars of A and B are 200 μ m; bars of C and H–J are 20 μ m; bars of D–G are 10 μ m.

a thinner wall (Couch 1945, Couch and Bland 1985). Finally, the RS of our larva are not fusiform as in *C. stegomyiae* var. *chapmani* (Couch and Bland 1985) but ellipsoid. This and all the other observed characters agree with those of *C. stegomyiae* var. *stegomyiae*, a widespread Gondwanian *Coelomomyces*, originally described from Malaysia, and a relatively common parasite of *Aedes albopictus* in the Oriental

Region (Keilin 1921, Couch and Bland 1985, Laird et al. 1992).

Aedes albopictus is one of the most common, widespread, and aggressive mosquitoes of Macau (Ramos 1990, 1994; Easton 1994) and is a dangerous vector of dengue and other arboviruses in the Oriental Region. It may be useful to know that a potential agent of biological control of this important vector also occurs in Macau.

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