

## Short Communication

## A new record of *Achlya klebsiana* from snakehead, *Channa striatus*, with fungal infection in Myanmar

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This is the first record of the discovery in Myanmar of *Achlya klebsiana*, belonging to the family Saprolegniaceae.

Key Words—*Achlya klebsiana*; *Channa striatus*; snakehead.

The genus *Achlya* belongs to the family Saprolegniaceae, a common member of the fungal flora in freshwater ecosystems. Members of the genus *Achlya* have been frequently reported in association with fungal infection in fish and fish eggs (Wesley and Wolf, 1937; Srivastava and Srivastava, 1977; Srivastava, 1980; Sati, 1985; Czczuga and Woronowicz, 1993). Generally the fungal infection occurs when fish are injured either mechanically or as a result of non-fungal infections. We obtained a cultured specimen of the snakehead, *Channa striatus* Bloch, with a fungal infection from a fish farm near Yangon in Myanmar. The snakehead showed petechial haemorrhages and its malnourished condition was obvious to the

naked eye (Fig. 1). A fungus was isolated from lesions on the body surface of the fish using PDA (potato-dextrose agar).

After isolation of the fungus in pure culture, it was maintained on hemp seed halves in 8 ml of sterilized tap water in a vial with a screw-cap and given the collection number NJM 9408. The fungus showed a white colony, dense near the substratum on glucose-yeast extract agar (GY agar), the standard medium performing for this identification containing of 10 g glucose, 2.5 g yeast extract, 12 g agar in 1 L distilled water. In GY broth, principal



Fig. 1. Snakehead, *C. striatus* with fungal infection on the body surface. Note malnourished condition and petechial haemorrhages on the body surface.

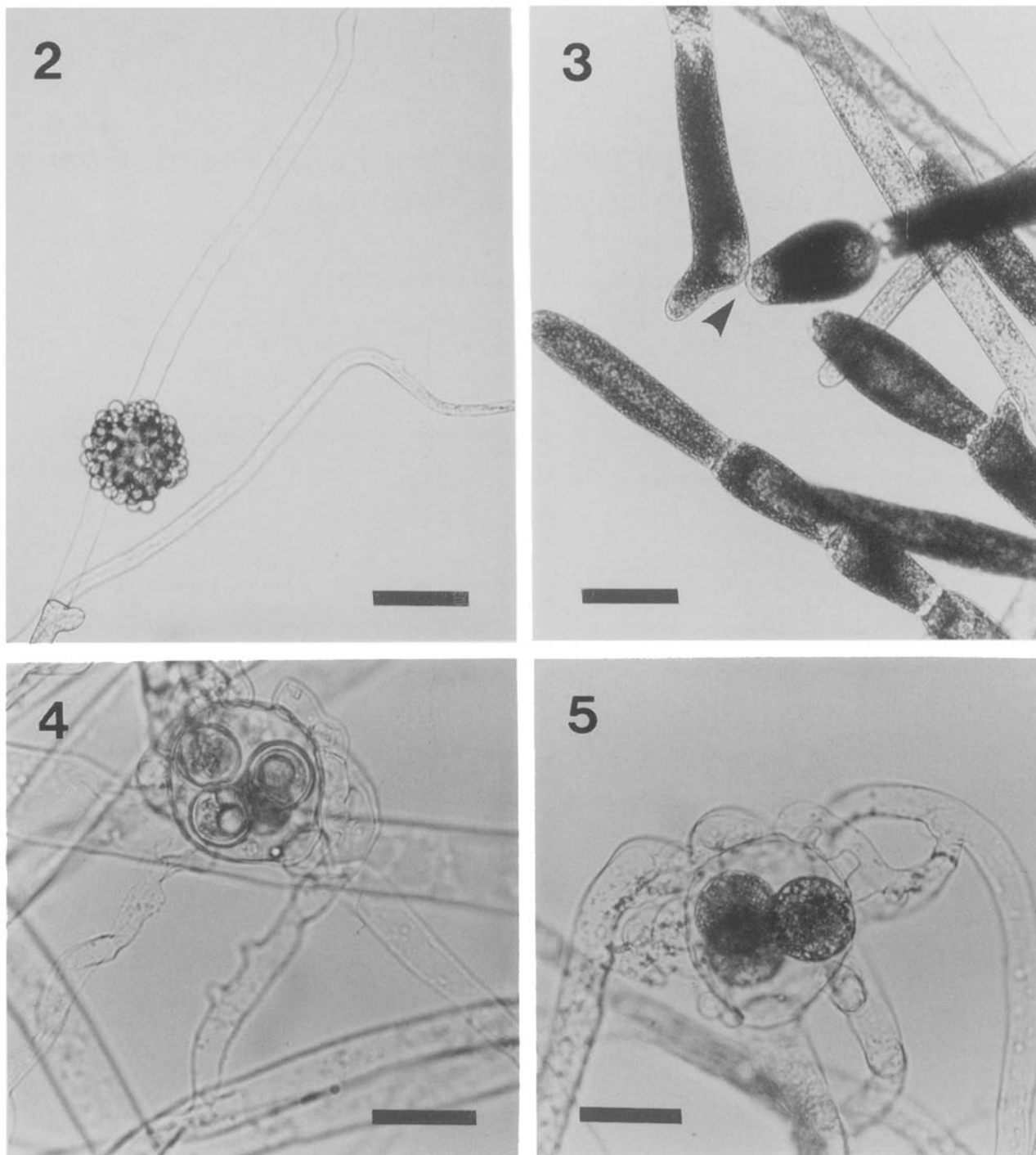


Fig. 2. Primary zoospores discharged from lateral pore of zoosporangium and encysted as a cluster of *A. klebsiana* NJM 9408. (Scale bar=100  $\mu\text{m}$ .)

Fig. 3. Catenulate gemmae and disarticulation (arrow). (Scale bar=100  $\mu\text{m}$ .)

Fig. 4. Eccentric oospore in a spherical oogonium with diclinous antheridia. (Scale bar=50  $\mu\text{m}$ .)

Fig. 5. Antheridial appression by projections. (Scale bar=50  $\mu\text{m}$ .)

hyphae were stout with sharp tips characteristic of the genus *Achlya*, and moderately branched with thinner secondary hyphae, 33–57  $\mu\text{m}$  in diam near the bases. The fungus was incubated at 25°C for 24 h in GY broth to grow mycelia. The mycelia were washed twice with sterilized tap water and transferred into sterilized tap

water to induce zoospore formation. Abundant zoosporangia were formed in the sterilized tap water culture within 24 h of incubation at 25°C. Zoosporangia were filiform, occasionally fusiform, straight or occasionally bent near apices. Zoosporangia were renewed in basipetalous succession, infrequently in sym-

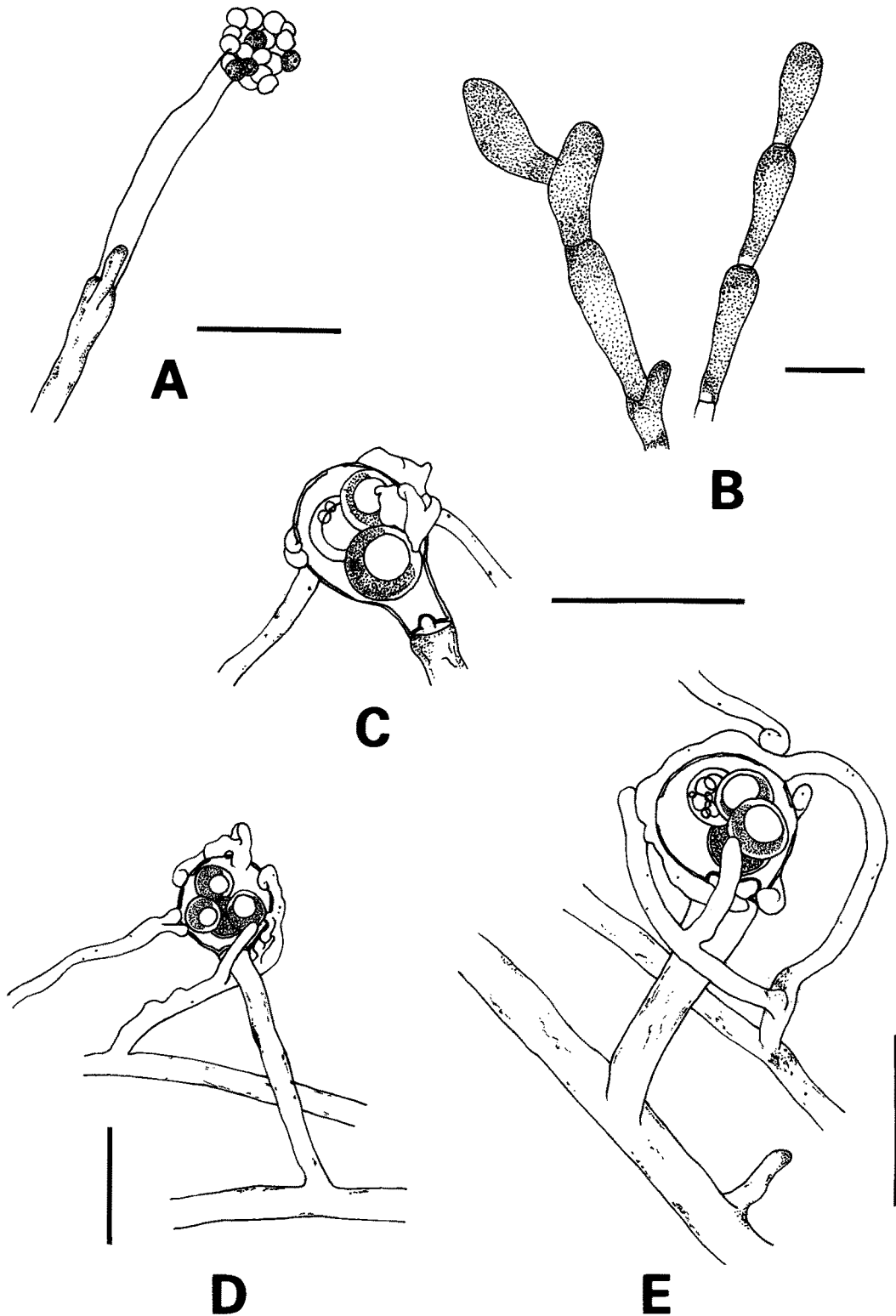


Fig. 6. *Achlya klebsiana*. A. Zoosporangium with spore cluster at the apex; B. Gemmae; C, D, E. Mature oogonia showing eccentric oospores, pitted oogonial walls, with declinuous antheridial branches. (Scale bar = 100  $\mu$ m.)

podial arrangement. Zoospores were discharged in the achlyoid type, occasionally discharged from one or more lateral discharge pores, and spore clusters were usually persistent at exit pores. Encysted spores were 11-

13  $\mu$ m in diam. Gemmae were very abundant, fusiform, filiform, clavate, occasionally irregular, single or catenulate, branched, disarticulate, and functioning as zoosporangia. Oogonia were formed moderately or spar-

sely on hemp seed halves in sterilized tap water after incubation at 15°C for 7–10 days. Oogonia were formed at the terminal or lateral parts of principal vegetative thalli. Oogonia were spherical or pyriform, 57–78 µm in diam, and pitted under the points of attachment of antheridial cells. Oogonial stalks were stout, straight or slightly curved, their upper parts occasionally flared convex into the oogonial portions, and their diameters were 1.5–6 times those of the oogonia. The fungus showed a preponderance of simple or sparingly branched declinuous antheridial branches. Antheridial cells appressed oogonia by lateral appression or by short projections. Oospores were eccentric, spherical, occasionally abortive, not filling the oogonium, 1–8 in number per oogonium, and 22–28 µm in diam. The morphological characteristics described above are illustrated in Figs. 2–6. From the characteristics described above, the isolate was identified as *Achlya klebsiana* Pieters according to Johnson (1956).

*Achlya klebsiana* is quite similar to *A. bisexualis* Coker & Couch, *A. flagellata* Coker and *A. ambisexualis* Raper (Johnson, 1956), since the size of oogonia, number of oospores and length of oogonial stalk are in similar ranges. Nevertheless, *A. bisexualis* and *A. ambisexualis* could be distinguished from the fungus by the requirement of coordination of the mating process, which is regulated by steroid hormones (Barkdale, 1965, 1969; Gooday, 1983). Moreover, antheridial branches of *A. bisexualis* and *A. ambisexualis* are declinuous. In the case of *A. flagellata* also exhibits declinuous or monoclinal antheridial branches, but infrequently or rarely exhibits androgynous type. On the other hand *A. klebsiana* exhibits declinuous antheridial branches occasionally or extremely rarely monoclinal depending on the strain (Johnson,

1956). However *A. klebsiana* has a crucial vegetative performance which differs greatly from the others in zoospores occasionally being discharged from the lateral area of the zoosporangium. This isolate was identified as *A. klebsiana* for the reasons mentioned above. This is the first record of *A. klebsiana* from Myanmar.

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