

conidia simplicia, solitaria, sicca, acropleurogena, pallide olivacea, usque 8 transverse septata, obclavata usque subcylindrica ad bases obconicotruncata vel subtruncata, ad apices subacuta usque obtusa hilo non incompressato donata, glabra,  $27.6\text{--}59.8 \times 2.8\text{--}4.6 \mu\text{m}$ .

Infection spots amphigenous, very small to considerably large, necrotic, irregular, greyish-brown, sometimes surrounded by green haloes; colonies amphiphylous, confined to the necrotic region of the spots, greyish-brown; hyphae immersed, septate, smooth, branched; stromata well-developed, irregular, pseudoparenchymatous, mid-olivaceous,  $9.2\text{--}23.0 \mu\text{m}$  in diameter; conidiophores macronematous, mononematous, caespitose, densely packed, up to 3-septate, branched, suberect, slightly flexuous towards the apices, light-olivaceous,  $11.5\text{--}59.8 \times 3.5\text{--}4.6 \mu\text{m}$ ; conidiogenous cells integrated, terminal, polyblastic, sympodial, denticulate, with short broad to slightly pointed denticles, sometimes denticles closely set; conidia simple, solitary, dry, acropleurogenous, light-olivaceous, up to 8-transversely-septate, obclavate to subcylindric, bases obconicotruncate to subtruncate, apices subacute to obtuse, hila unthickened, smooth,  $27.6\text{--}59.8 \times 2.8\text{--}4.6 \mu\text{m}$  (figure 2).

On living leaves of *Tinospora cordifolia* (Willd.) Miers. (Menispermaceae); October, 1979; Nichlaul (North Gorakhpur Forest Division); leg. A. N. Rai, KR 324, type IMI 243041.

The present fungus bears some resemblance of *P. cocculi* (H. Syd.) Deighton, one of the two species that have been reported earlier on the host family<sup>1</sup>.

The length of conidiophores is more or less the same in both species. However, the author's

collection differs from *P. cocculi* in other characters such as well-developed stroma; denticulate and narrower conidiophores; smooth, much shorter and narrower conidia with a small number of septa in the former, compared to less-developed stroma; nondenticulate and wider conidiophores; smooth, wrinkled or verruculose, much longer and wider conidia with a larger number of septa in *P. cocculi*. Hence, the new collection is described as a new species, *P. tinosporae*. So far no species of *Pseudocercospora* has been reported on the host genus.

The authors are grateful to the Director, CMI, Kew, England, for identifying the fungus.

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#### FIRST REPORT OF OCCURRENCE OF OOSPORES OF *PSEUDOPERONOSPORA CUBENSIS* ON TWO CUCURBITACEOUS HOSTS

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DOWNY mildew of muskmelon (*Cucumis melo* L.) and other cucurbitaceous plants, caused by *Pseudoperonospora cubensis* (Berk and Curt.) Rostow, is a serious disease that occurs annually under favourable climatic conditions. Under Punjab conditions, the pathogen is known to perpetuate in the form of active mycelium on self-sown or cultivated sponge gourd (*Luffa aegyptiaca* Mill.) vines growing in sheltered places during severe winter and also in open spaces during milder winters<sup>1</sup>. Bains *et al.*<sup>2</sup> also reported the occurrence of oosporic stage on a wild host *Melothria maderaspatana*. The present communication reports the occurrence of oosporic stage of *P. cubensis* on two cucurbitaceous hosts, pumpkin (*Cucurbita moschata* Duchesne) and sponge gourd (*Luffa aegyptiaca* Mill.) under local conditions.

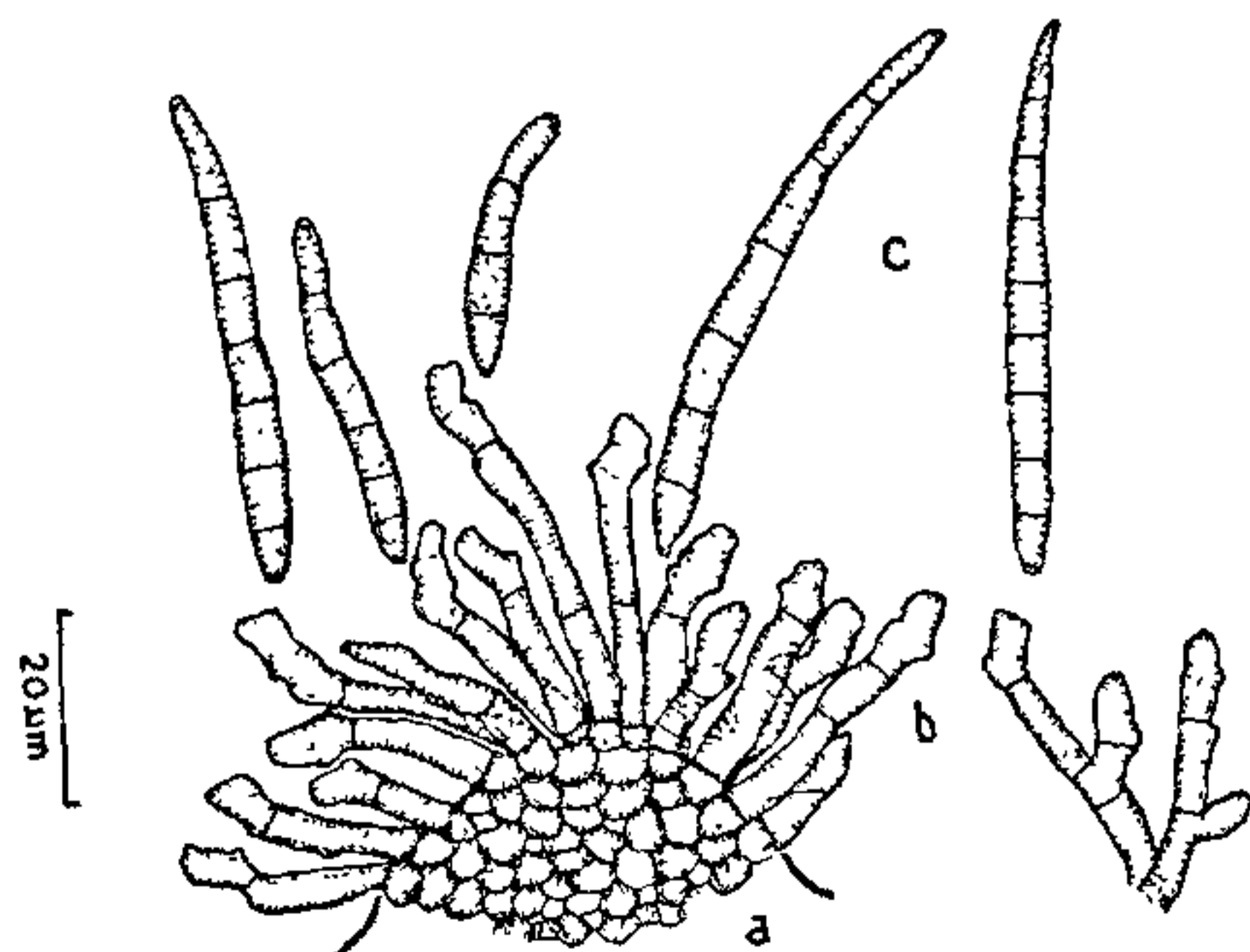


Figure 2. *Pseudocercospora tinosporae* A. N. Rai et Kamal sp. nov. a, Stroma; b, conidiophores; c, conidia.

Infected leaf samples showing typical circular to angular lesions were collected from off-season vines growing in the farm of the Department of Plant

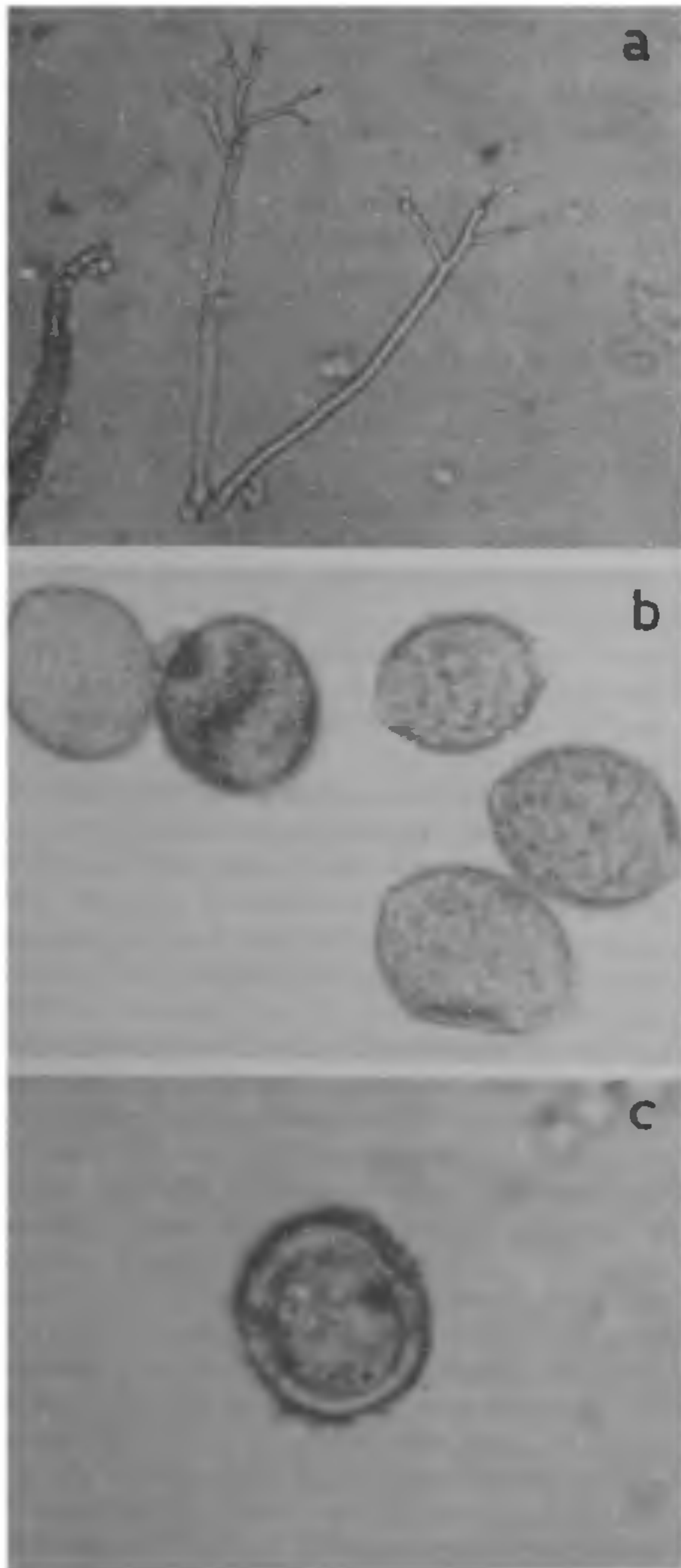


Figure 1a-c. a, A typical dichotomously branched sporangiophore of *Pseudoperonospora cubensis*; b, sporangia; c, a thick-walled oospore.

Pathology during the beginning of December, 1988. Microscopic examination of the infected tissue revealed the presence of oospores, which were smooth, globose in shape, yellow to light-brown, and with a thick outer wall. These were observed in good numbers and averaged  $25 \times 23 \mu\text{m}$  (figure 1c). The oospores were typical of *P. cubensis* of the type found on leaves of cucumber in China<sup>3</sup> and on leaves of parwal (*Trichosanthes dioica* Roxb.) in India<sup>4</sup>, but slightly bigger in size than the ones reported by Bains *et al.*<sup>2</sup> on leaves of *M. maderaspatana*. We could not search for oospores from downy mildew-infected vines of various cucurbitaceous hosts during the regular growing season of the crop. To confirm the identity of the oospores, the infected samples were incubated at  $20^\circ\text{C}$  in a humid atmosphere. The typical dichotomously branched sporangiophores (figure 1a) with terminal papillate sporangia were observed. The sporangia were  $25.0\text{--}37.5 \times 12.5\text{--}25.0 \mu\text{m}$  in size (figure 1b). These observations confirm that the fungus was typical *P. cubensis*.

This report provides information on the possible mode of perpetuation of *P. cubensis* as oospores under a certain set of conditions which ensures the colonization of the same zone of the host tissue by mycelia of opposite sexual compatibility. It also shows that oospores, in addition to the vegetative stage, may be playing a role as a primary source of infection in the following year, particularly when self-sown vines/main season vines are available for colonization by the pathogen during winter.

The infected samples have been deposited in the Herbarium, Department of Plant Pathology, PAU, Ludhiana.

14 February 1989

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