capituli ramuli hyalini, ad apicem inflati, pallidiores, cylindrici, stipite pallidiores; cellulae conidogenae polyblasticae, integratae, terminales, cum capituli ramulis commixtae, sympodiales, cylindricis, cicatricibus notatae, cicatricibus conidicis bene evolutis; conidia catenata, sicca, simplicia, acropleurogena, recta, plus minusve cylindrica, hyalina, haud septata, levia, vulgo 8–11 × 3·75–6 μm.

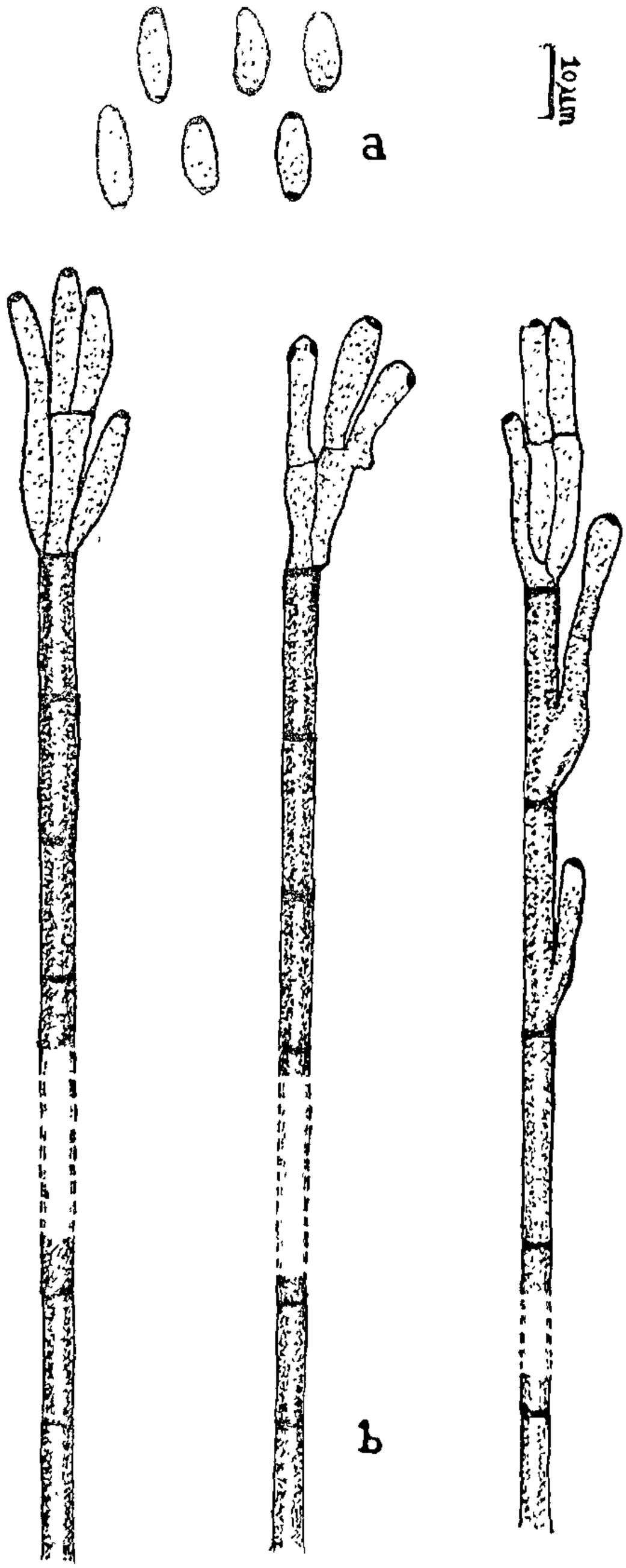


FIG. 1. *Periconiella minutella* Kumar and Kamal sp. nov. (*a*) Conidia, (*b*) Conidiophores.

In foliis vivis *Casearíae ellipticae* Willd. Gorakhpur m. Decembri 1977 leg. P. Kumar 1; IMI 229182, typum.

Colonies predominantly hypophyllus, effuse, hairy, brown; hyphae partly immersed, partly superficial, hyaline to sub-hyaline, septate, branched, smooth; conidiophores macronematous, mononematous, solitary, straight to slightly flexuous, thick walled, brown, divided into a stipe and a well marked head bearing small fertile branches; stipe up to 500 × 5·4–6·3 μm (usually 5·4 μm), septate, smooth; branches of the head hyaline, swollen and paler at the apex, cylindrical, paler than the stipe; conidiogenous cells polyblastic, integrated, terminal, incorporated with branches of the head, sympodial, cylindrical, cicatrized, with well developed conidial scars; conidia catenate, dry, simple, acropleurogenous, straight, more or less cylindrical, hyaline, *o*-septate, smooth, usually 8–11 3·75–6 μm (Fig. 1*a*, *b*).

On living leaves of *Casearia elliptica* Willd. Gorakhpur, December, 1977; leg. P. Kumar, 1; IMI 229182.

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1. Ellis, M. B., *Dematiaceous Hyphomycetes*, CMI, Kew, England, 1971, pp. 608.
2. —, *More Dematiaceous Hyphomycetes*, CMI, Kew, England, 1976, pp. 507.

## A NEW EXPERIMENTAL RESEARCH ANIMAL FOR *MYCOBACTERIUM LEPRAEMURIUM*: *MASTOMYS NATALENSIS*

*Mycobacterium leprae* and *M. lepraemurium* are fastidious and exacting microorganisms in their growth requirements. Absolute proof of their *in vitro* cultivation is not yet fully confirmed (Ridley[1]); however, they have been cultivated *in vivo* in one or the other animal species[2–5]. Despite their *in vivo* cultivation, very few experimental models are available for their study. Since these mycobacteria have many common facets, development of newer experimental models are of renewed interest. Attempts to grow *M. lepraemurium* in *Mastomys natalensis* have not been made so far. This communication reports that *M. lepra-*

*murium* was successfully grown in this species of animal and it can serve as an alternative experimental host.

The strain of *Mastomys natalensis*, a multimammate rodent, was originally obtained from the Institute for Parasitology, Giessen, West Germany, through the courtesy of Prof. Dr. G. Lammler in 1974 and since then is being maintained at this Institute. It was kept on Hindustan Lever diet supplemented by shrimps with water *ad lib*. *M lepraemurium* strain M. 57, Hawaii, was obtained from Kyoto University (Nishimura), Japan, in lyophilized condition and is maintained in Duckrey strain of rat using subcutaneous leproma as a source of inoculum. The leproma was homogenized with sterile sand and pestle and mortar and a 10% suspension was made in RPMI–1640 medium. This was allowed to settle at room temperature for 5 minutes. The supernatant was centrifuged at 1,500 rpm for 5 minutes. The sediment was again washed in the same medium by centrifugation. The acid fast bacilli (AFB) in the final supernatant were counted by the method of Shepard and McRae[6].

The suspension (0·2 ml) was injected into about 2 months old mastomys and Duckrey rats subcutaneously over the sternum. In both groups 10 animals were taken. The AFB count of the inoculum was found to be $7{\cdot}2 \times 10^8$/ml. The animals were examined at regular intervals of time for any visible or palpable growth of leproma at the site of injection. The lepromas were scored as follows:

1+ (rice grain size), 2+ (15 × 15 mm, soft), 3+ (20 × 20 mm, hard) and 4+ (> 20 × 20 mm, hard). The palpable leproma scores and the animal body weights of both the animal species have been presented in Table I.

There was regular increase in the body weight of Duckrey rats with time in the initial stages. On the contrary there was no marked increase in the body weight of mastomys, rather there was a weight loss particularly nearing death. Following the development of leproma in mastomys, the hair became coarse and the animals became gradually emaciated accompanied with alopecia. The Duckrey rats also had a loss of body condition but not appreciable as in mastomys. Since young animals were selected for the study, there should have been a constant increase in their body weight with the advancement of age. This has followed the normal course in Duckrey rats, but not in mastomys, indicating the latter's higher susceptibility towards this infection.

Table I shows that initially the lepromas were very small in mastomys as compared to rats, but later on, by about 200 days of infection, the palpable score became practically the same in both the species of animals. On 231st day, two mastomys died. The remaining animals of both the species were sacrificed and autopsy performed. All the animals were positive for subcutaneous lepromas, although the size varied in individual animals. A cluster of subcutaneous lepromas grown in mastomys is shown in Fig. 1.

FIG. 1. A cluster of lepromatous nodules in *Mastomys natalensis* infected subcutaneously with *M. lepraemurium*.

The impression smears of s/c leproma, spleen, liver and lungs were examined for AFB in both the species. The subcutaneous lepromas were almost 3+ to 4+ in both groups but in spleen, liver and lung smears, there were either no AFB or only a few bacilli per field. There was no evidence of gross systemic infection, as there were no lesions in the liver and spleen and pelvic fat was not enlarged in both the groups. It is obvious that mastomys may be infected with *M. lepraemurium* and used as an alternative experimental model for

TABLE I

*Palpation score of mastomys and rat infected subcutaneously with* M. lepraemurium

| Group | 58 days | | 87 days | | 128 days | | 161 days | | 200 days | | 231 days | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Av. body wt. (g)* | Score* | Av. body wt. (g) | Score | Av. body wt. (g) | Score | Av. body wt. (g) | Score | Av. body wt. (g) | Score | Av. body wt. (g) | Score |
| Mastomys | 50 | 0·08+ | 50 | 0·33+ | 53 | 0·5+ | 60 | 1·5+ | 55 | 2·8+ | 45 | 3·0+ |
| Duckrey Rat | 132 | 0·67+ | 192 | 1·0+ | 214 | 1·5+ | 208 | 2·3+ | 220 | 3·0+ | 228 | 3·5+ |

* = Average of 8 animals.

Scores: 1+= rice grain size; 2+= 15 × 15 mm soft; 3+= 20 ×20 mm hard; 4+ => 20 × 20 mm hard.

this infection. The strain of *M. lepraemurium* used in this study has been long adapted in rats and mice and is new for mastomys since this was the first passage in this species. Its virulence in mastomys may increase on subsequent serial passages. The work in this line is in progress.

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1. Ridley, D. S., *Trop. Dis. Bull.*, 1976, **73**, 2053.
2. Balfour-Jones, S. E. B., *J. Path. Bact.*, 1937, **45**, 739.
3. Carpenter, C. M., *Ann. N.Y. Acad. Sci.*, 1951, **54**, 101.
4. Shepard, C. C., *J. Exp. Med.*, 1960, **112**, 445.
5. Kirchheimer, W. F. and Storrs, E. E., *Int. J. Lepr.*, 1971, **39**, 693.
6. Shepard, C. C. and McRae, D. H., *Ibid.*, 1968, **36**, 78.

## NUCLEAR POLYHEDROSIS OF *PLUSIA SIGNATA* (LEPIDOPTERA: NOCTUIDAE)*

THE occurrence of the nuclear polyhedrosis in *Plusia chalcytes* Esp. larvae infesting groundnut (*Arachis hypogaea* L., Leguminoseae) was reported from India by Rabindra *et al.*[1]. Polyhedral virus infection was noticed by authors on *Plusia signata* Fabricius infesting standing crops of finger millet (*Elusine coracana* Gaertn.). Infected larvae hanging upside down from prolegs was commonly observed. They were fragile and ruptured on touch giving out milky white contents. Infected larvae were sluggish in their movement and turned light green as against the deep-green colour of healthy ones. The presence of polyhdra in fat and gut tissue as well as in preparations from body wall were observed under the light microscope.

Larvae showing polyhedrosis were macerated and suspended in water. The macerate was allowed to decompose in the conical flask for a month. The supernatant was decanted and the residual slurry was clarified by passing through cheese cloth and cotton swab. The resultant polyhedral suspension was used for further purification. Purified polyhedra were obtained by alternate slow (1250 g) and high 12100 g speed centrifugation for 10 and 30 min using Sorvall high speed centrifuge model RC-213 and SS-34 angular head. Infectivity test was carried out by feeding purified polyhdra to 7 days old larvae. The test indicated that the virus caused 90% mortality of the test la vae within 4 days.

After purification the polyhedra were observed under electron microscope. Inclusions were irregular in shape (Fig. 1). Triangular inclusions were also observed. Overall size of inclusions ranged from 0·96 to 1·74 μm with an average of 1·38 μm. In order to isolate individual virions, the crystallized protein of the inclusion bodies was selectively disaggregated by treating it with thioglycolate at pH 11 for 1 min. The dissolution was performed on the specimen holder (grid) of the electron microscope so that the virions at all stages of release could be observed. Fig. 2 shows a general appearance of this progressive separation of the polyhedron protein. Different stages of polydera appearing first as almost electron-dense bodies upto the complete release of virions and the number of virions included in each polyhedral body can be seen in the same figure. The number of virions varied from 20-32 in each polyhedron with an average of 28·5. Fig. 3 shows detailed characteristics of the virions. The virus appeared to belong to the baculovirus group and the virions were enveloped individually and not in bundles. Figure 4 shows the detailed structures of the virus. Entire