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VARIATIONS IN THE CONIDIAL MORPHOLOGY OF *PESTALOTIOPSIS DARJEELINGENSIS* IN CULTURE

DUBE *et al.* (1964) reported this fungus from Darjeeling on the leaves of *Quercus incana*. Another species, *viz.*, *P. clavispora* (Akt.) Stey., was recorded earlier on this host as *Pestalotia clavispora* Akt. by Mundkur and Kheshwalla (1942). The conidia of *P. darjeelingensis* when recovered from the diseased leaves are invariably clavate and five-celled, measuring 23·4-31·2 × 7·8–10·4 μ. They are further characterized by the presence of three olive intermediate cells, long filiform pedicel below the inferior hyaline cell and 4 to 8 setulæ measuring 20·8 to 52 μ over the superior hyaline cell.

Detailed cultural behaviour of the fungus was studied on Potato-dextrose agar slants. The conidial dimensions in culture varied from 31·2 to 42·2 × 7·1 to 9·1 μ while the length of the setulæ ranged from 10·4 to 20·0 μ. The shapes of various types of conidia obtained in culture are given in Fig. 1.

It is evident from Fig. 1 that the number of cells in the conidia varied from four to eight. Their percentage was as follows: four-celled 16%, five-celled 70%, six-celled 10% and eight-celled 4%. They were always characterized by the presence of superior and inferior hyaline cells and intermediate coloured cells. The conidial shape varied considerably. They were cylindrical, elliptic, clavate, elliptic-fusiform or clavate-fusiform. In several cases the size of the intermediate coloured cells did not show any uniformity. The superior hyaline cells always possessed elongated hyaline setulæ which showed considerable variations in their number as well as length. The inferior hyaline cells usually possessed short or long pedicel. These studies show that average conidial length was increased in culture, while the length of the setulæ was considerably reduced. The investigations impress upon the desirability of studying the role of various host-ingredients on conidial morphology of *P. darjeelingensis*.

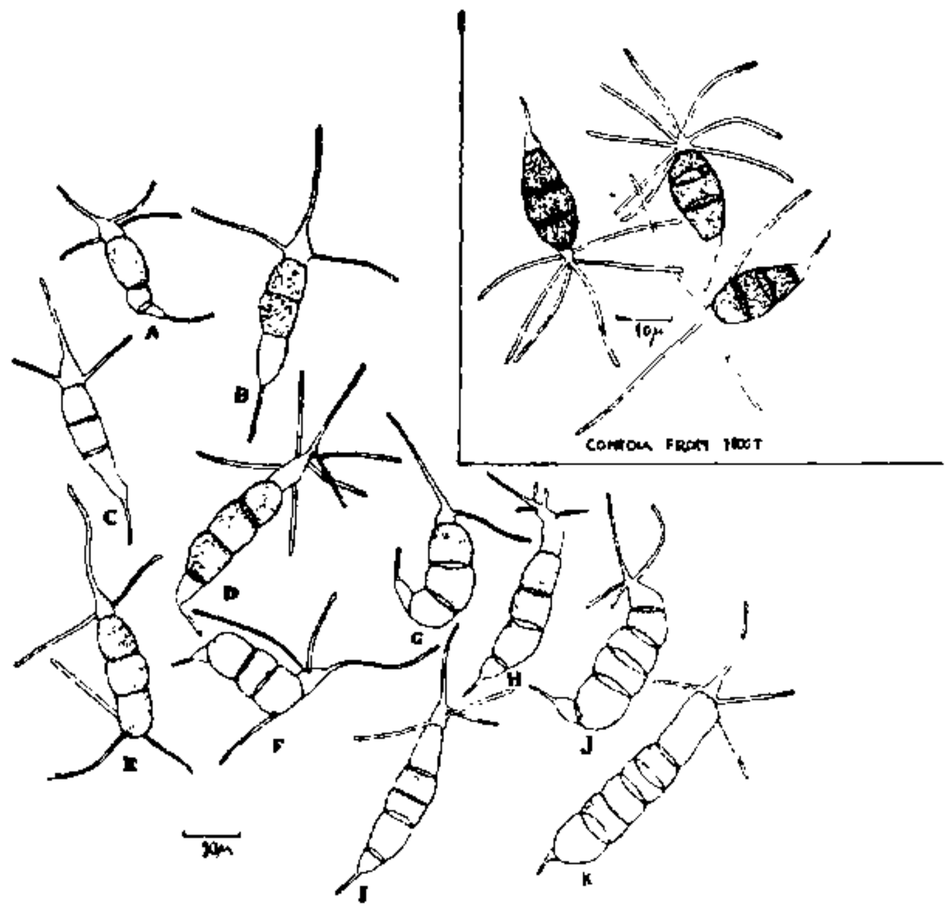

FIG. 1. A–C. Various types of four-celled conidia. D–H. Various types of five-celled conidia. Few conidia possess setulæ on both superior and inferior hyaline cells (E). I, J. Showing elliptic-fusiform and clavate-fusiform six-celled conidia respectively. I, K. Eight-celled conidia.

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Department of Botany, H. C. DUBE.
University of Allahabad, K. S. BILGRAMI.
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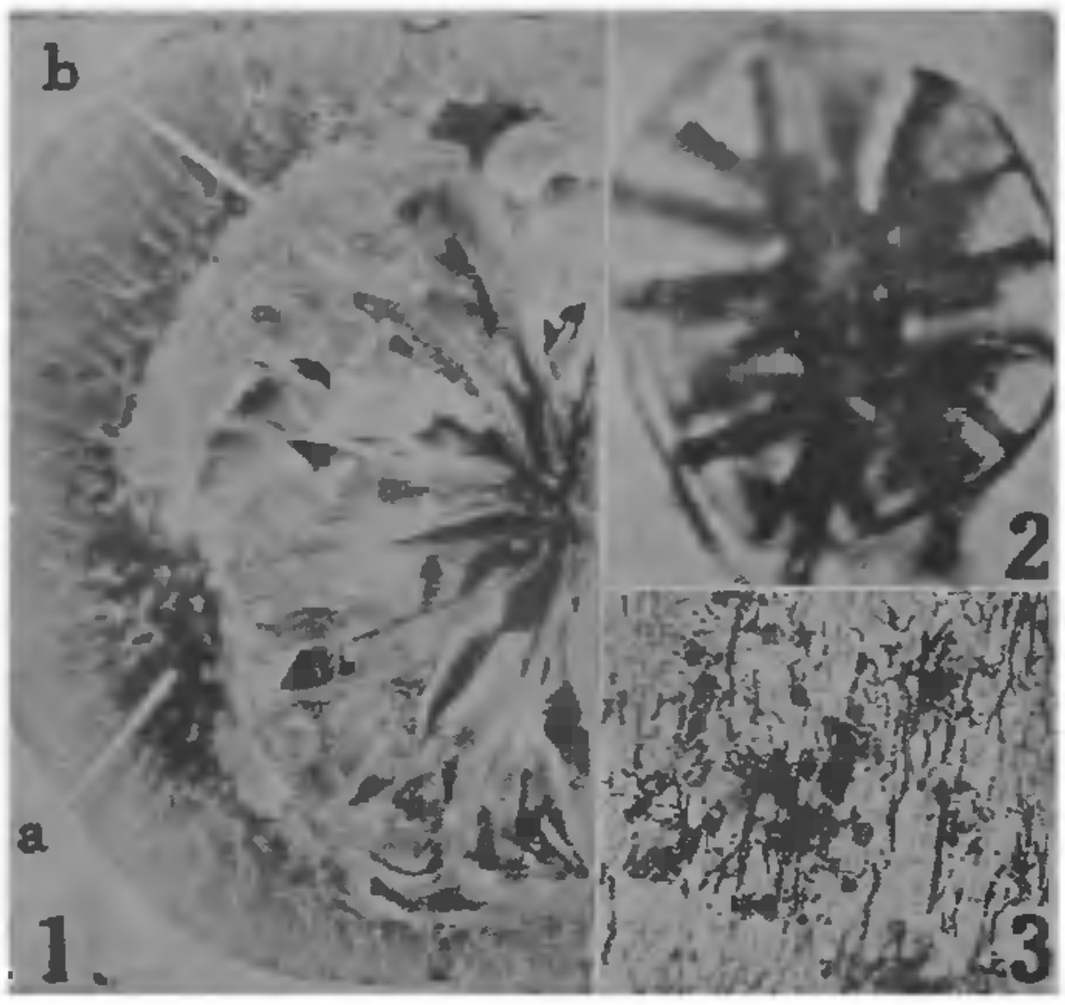
SCLEREIDS IN THE RIND OF A *CITRUS* HYBRID

THE plant under investigation is growing in the *Citrus* Orchard of Nani Agricultural Institute, Allahabad and was collected by (Late) Prof. W. B. Hayes. It flowers only once a year in late winters and the flowers though white are smaller than the normal pummelo flowers. The fruits are very large like sour pummelo. The juice is not very sweet and has the flavour of *Limonia acidissima*. The most peculiar feature of this hybrid is the brown-coloured inner side of the rind (Fig. 1-*a*). In between these brown areas there is a comparatively thin layer of lighter colour (Fig. 1-*b*). This layer is also very hard. The sections passing through brown

zones show large groups of sclereids (Figs. 2, 3) and vascular bundles with large amount of xylem tissue. These sclereids are also present in thin hard layers (Fig. 1-b). It is the abundance of these sclereids that gives so much hardness to the rind.



FIGS. 1-3. Fig. 1-*a*. Brown-coloured zone of hardness in the rind. Fig. 1-*b*. A layer of hard tissue. Fig. 2. A sclereid highly magnified. Fig. 3. Groups of sclereids.

The chromosome number of this hybrid has been found to be $2n = 18$, which is the diploid number for genus *Citrus*.[2-4,6-7] Meiosis of this hybrid exhibits very few anomalies.

This presumably is the first record of presence of large groups of sclereids in the rind of any *Citrus* fruits. The previous workers[1,8] have not reported any sclereids. Prof. F. M. Scott studied the rind of many varieties of *Citrus* growing in the University experimental orchards in Los Angeles and River-side but he never came across any stone cells (personal communication). On the basis of morphological characters this tree appears to be a hybrid between *Citrus limonia* and *C. grandis*. But both these species do not possess such large groups of stone cells in their rind. The two genera *Limonia acidissima* Linn. and *Aegle marimelos* of Rutaceæ have stony covering of the fruits. These genera are distantly related to genus *Citrus*. Till now there is no record of hybrids of *Citrus* with so distantly related genera; of course *Citrus* hybridizes without much difficulty with its nearly related genera like *Poncirus trifoliate* and *Fortunella*. Rusk citrange, one such intergeneric hybrid between *Citrus* and *Poncirus trifoliate*, shows fairly regular bivalent formation.[5] This indicates that large segments of *Citrus* chromosomes are homologous with *Poncirus*.

Some of the important characters of this hybrid like the presence of large groups of sclereids in the rind and flavour of juice indicates a possible relationship with *Limonia acidissima*. The chromosome number of *Limonia acidissima* is also eighteen.[9] But then this hybrid shows homology between its chromosomes and mostly bivalents are formed. The high percentage of pollen fertility is further evidence of its stable state. It is quite possible that intergeneric hybridization between *Citrus* and some other genus having large groups of stone cells in its rind followed by backcrossing with *Citrus* may have brought back most of the characters of *Citrus* but some of the characters of other genus may have persisted due to certain segmental exchanges between the chromosomes of these two genera during the meiosis in the intergeneric hybrid. That pairing between chromosomes takes place when *Citrus* hybridizes at least with its nearly related genera has already been reported.[5]

Cytogenetics Lab., S. S. RAGHUVANSHI.
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OCCURRENCE OF TRUFFLE DISEASE (*PSEUDOBALSAMIA MICROSPORA* DIEHL AND LAMBERT) IN MUSHROOM BEDS

DURING the course of experimentation on mushroom cultivation at Plant Pathology Laboratory, Solan, Himachal Pradesh, H. S. Sohi, P. K. Seth and S. Kumar observed a very heavy incidence of the Truffle disease caused by *Pseudobalsamia microspora* Diehl and Lambert in the bearing trays of *Psalliota bispora* (Lange) Moller and J. Schaffer in the last week of April 1964. The disease first appeared when the temperature of the compost in the trays reached beyond 70° F. During initial stages of the disease, the infected trays produced some