

ON THE OCCURRENCE OF AN IMPERFECT FUNGUS,
TETRACOCOCCOSPORIUM OBTAINED FROM A FOSSIL WOOD
BELONGING TO THE DECCAN INTERTRAPPEAN SERIES,
(M.P.) INDIA

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ABSTRACT

A well preserved septate mycelium having 4-celled conidia with short conidiophores belonging to an imperfect fungus was found in the vessels of a fossil dicot wood. The wood is being described separately. It was collected from Mohgaonkalan, Dist. Chhindwara, M.P., India. Comparing its characters with those of living fungi, this fungus was found to belong to the genus *Tetracoccosporium* Szabo and is a new species. It has been named as *Tetracoccosporium eocenum* sp. nov.

INTRODUCTION

FOSSIL fungal remains in the form of spores, hyphae and perithecia etc. have been described from different localities of Tertiary deposits in India by several authors. Sahni (1943), Chitale (1951, 1957), Dwivedi (1959), Lakhanpal *et al.* (1967), Mahabale (1968) have described them from the Deccan Intertrappean Series of Mohgaonkalan, Chhindwara, M. P., and Sahni and Rao (1943) from the cherts found at Sausar. Jacob & Jacob (1950), Ramanujam (1963) have described them from the South Arcot lignite (Tamil Nadu State); Rao (1950, 1958) from Palana (Bikaner) and South Arcot; Venkatachala and Kar (1969) from the bore hole no. 14, Matanomadh, Kutch; Jain & Gupta (1969) from Tertiaries of Kerala coast. The specimen on which the present account is based is from Mohgaonkalan and is well preserved. It has ramose hyphae and thick-walled brown coloured quadrate conidia on short conidiophores. Mycelium is septate and lodged in the vessels of a dicot wood resembling the wood of *Sonneratioxylon*.

SYSTEMATIC DESCRIPTION OF
THE ENDOPHYTE

Class — DEUTEROMYCETES

Order — MONILIALES

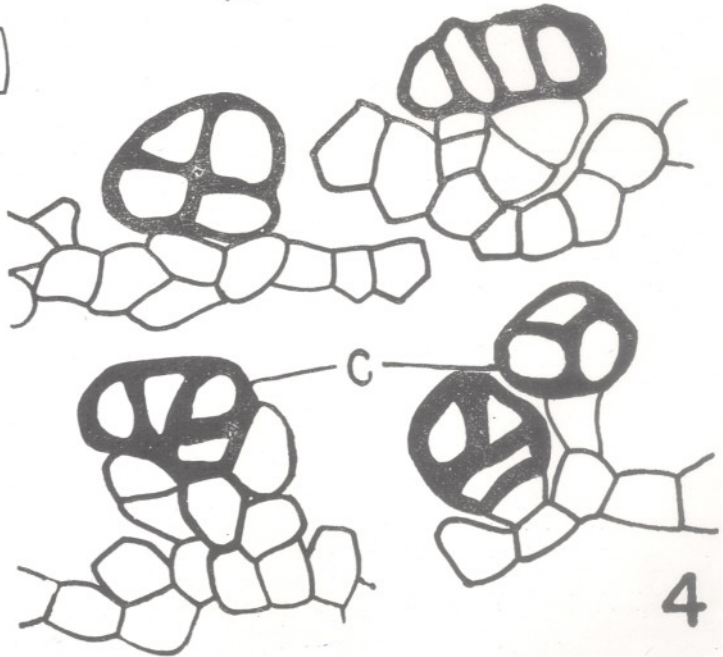
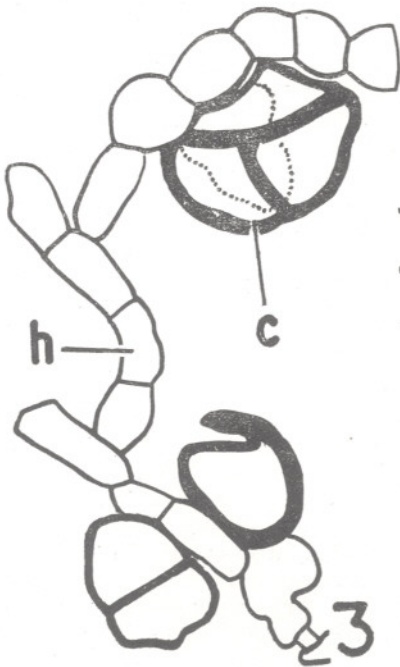
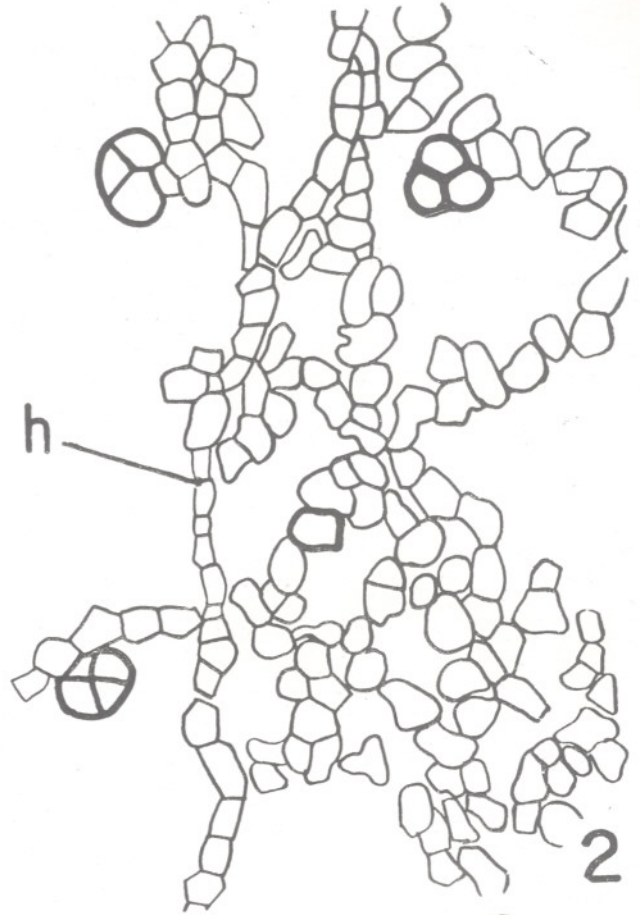
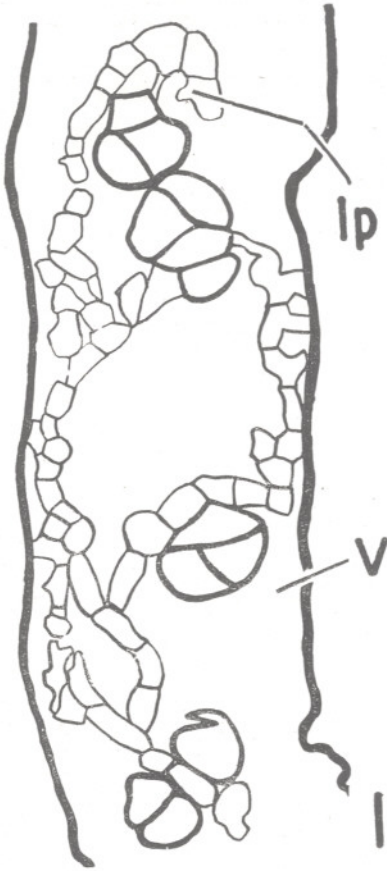
Family — DEMATIACEAE

Genus — *Tetracoccosporium* Szabo

Tetracoccosporium eocenum sp. nov.

Pl. 1, Figs. 1-4; Text-figs. 1-4

A piece of wood 5×3.5 cm belonging to dicots was collected by one of us (T.S.M.) from the well-known locality, Mohgaonkalan, M. P. This fossil wood after a thorough investigation turned out to be a species of the genus *Sonneratia* and hence has been named *Sonneratioxylon* of which it seems to be a distinct species. The wood is being described separately. While examining the tangential longitudinal sections of this wood it was observed that its vessels and adjoining tissues were heavily occluded by an endogenously grown, well preserved fungus at various places (Pl. 1. Fig. 1; Text-fig. 1). The hyphae produced conidia, characteristic of an imperfect fungus. They are sessile, or having very short conidiophores. The conidiophores measured 6×7μ across (Pl. 1, Figs. 2-4; Text-figs. 2-4). The conidia are variously arranged in groups of four cells. They are nearly spherical or Tetrahedral, horizontally linear or T-shaped. This arrangement seemed to be very typical of this fungus (Pl. 1, Figs. 2, 3, 4; Text-figs. 3 & 4). Conidia were thick-walled, smooth, dark brown to black 13×18 μ. An individual spore in the quadrate conidium measured 8.4×9 μ. Comparing these characters, branching of the hyphae, and conidia with those in the living fungi,



TEXT-FIGS. 1-4

it seemed to belong to the family Dematiaceae, Order Moniliales (Barnett, 1960; Bessey, 1964; Clements & Shear, 1954). Its features fully tally with those of the living genus *Tetracoccusporium* Szabo and it is identical with that genus. However, it differs in one or the other characters from those of the known living species and is a distinct new species. It is also very ancient being from the Tertiary deposits of India belonging to Eocene period in M. P. It has been named as *Tetracoccusporium eocenum* sp. nov.

DISCUSSION

The characters of conidia of the present fossil fungus are very much similar to those of the genera *Tetracoccusporium* and *Dictyoarthrinium*. Both of them have somewhat similar conidia, but they differ from each other in the nature and structure of hyphae and conidiophores (Barnett, 1960; Clement & Shear, 1954, and Hughes, 1952).

In *Tetracoccusporium* conidiophores are numerous. They may be very short or absent. Conidia arise as lateral swellings on branched, septate mycelium. They are 4-celled cross-shaped, dark and smooth
.....*Tetracoccusporium*

Conidiophores are simple, sub-hyaline, crowded, straight or curved with thick dark septa; conidia dark brown, 4-celled, cross-shaped, either apical or lateral in position on conidiophore*Dictyoarthrinium*.

In point of shape size and structure of the conidia and mycelium the fossil fungus shows close resemblance with the genus *Tetracoccusporium* rather than with *Dictyoarthrinium*. According to Hughes (1953) these two genera are different as indicated above.

The genus *Tetracoccusporium* was created by Szabo in 1905 for the fungus producing

quadrate to rectangular, 4-partite conidia on hyphae. Mycelial hyphae being separate, hyaline and ramosus.

The genus *Tetracoccusporium* is represented all over the world by six living species. It is represented in India by three species occurring on dead leaves of *Saccharum officinarum*, *Asterina funtumiae* and in paddy fields on debris (Saccardo, 1906; Rao & Dev Rao, 1964; Ghosh & Dutta, 1962). The genus *Tetracoccusporium* was also previously known as *Stemphyllium* or *Epochnium* which are now considered its synonyms.

The present species does not tally with the known living species. It occurs in the Eocene beds of Mohgaonkalan which is of entirely distinct age from that of other species. Hence it is regarded as a new one. It has been named as *Tetracoccusporium eocenum* sp. nov.

Diagnosis — *Tetracoccusporium eocenum* sp. nov.

Hyphae septate, thin-walled to moderately thick-walled, hyaline, profusely branched; individual cell measuring $9.4 \times 5 \mu$. Conidia $13 \times 18 \mu$, thick-walled, smooth, dark brown to blackish brown, 4-celled, variously shaped, viz., cruciate or horizontally linear, T-shaped or nearly spherical. A single cell of conidia measures $8.4 \times 9 \mu$. Conidiophores very short, $6 \times 7 \mu$.

Locality — Mohgaon Kalan, Dist. Chhindwara, M. P., India.

Horizon — Deccan Intertrappean Series
Age — Eocene

Holotype — 1/68 Bot. Dept. University of Poona, Poona-7.

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TEXT-FIGS. 1-4 — A new species of an imperfect fossil fungus, *Tetracoccusporium eocenum* sp. nov. 1. Longitudinal section of a vessel — V, showing branched and septate hyphae: Note that at some places the single cell of an hypha shows lateral projections — *lp.* $\times 857$. 2. Fungus magnified to conidiophores $\times 857$. 3. A part of hyphae — *h* and conidia — *c* magnified to show the septate and branched nature of mycelium. $\times 1428$. 4. Shows different types of conidia — *c.* $\times 1428$.

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*Not seen in original.

EXPLANATION OF PLATE

PLATE 1

Figs 1-4. A new species of an Imperfect fossil fungus, *Tetracoccosporium eocenum* sp. nov.

1. Tangential longitudinal section of a vessel-v of a dicot wood heavily infected with fungus

having branched hyphae and conidia — *c.* × 48.

2. An infected part of a wood magnified to show the branched hyphae — *h* and quadrate conidia — *c.* × 82.

3 & 4. Different types of conidia — *c.* stalked on a very short conidiophores (Fig. 3 × 140 and Fig. 4 × 160).

