

## A Perithecial Mutant of the Cleistothecial Fungus *Tripterospora tetraspora*

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**Summary.** A perithecial mutant of the cleistothecial fungus *Tripterospora tetraspora* isolated from Indian "Usar" (alkaline) soils (pH 10.5) is described.

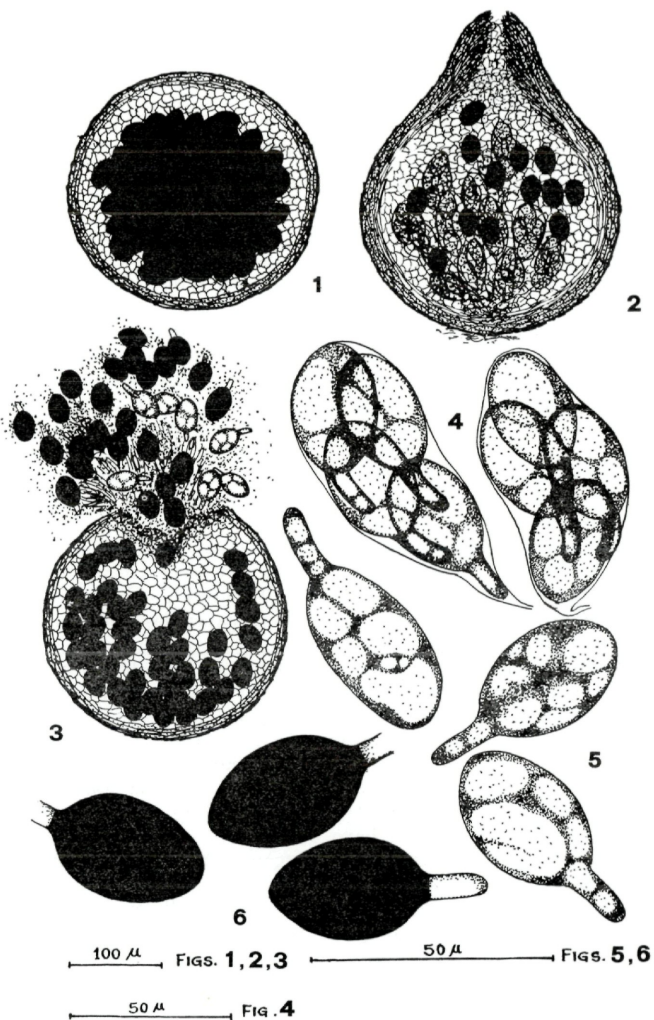
CAIN (1956) established the genus *Tripterospora* and distinguished it from *Podospora* on the basis of inostiolate ascospores, irregularly orientated evanescent asci, poorly developed paraphyses and lack of secondary gelatinous appendages in the ascospores. It was placed in the family Tripterosporaceae of the order Plectascales.

RAI et al. (1963) described a new species of the genus *Tripterospora*, *T. tetraspora*, which is characterized by the presence of 4 spored asci. This species has been frequently isolated from highly alkaline 'Usar' soils (pH 7.5—11.0) and certain strains of it isolated from soils of high pH exhibited abnormal structures (RAI et al., 1974). Recently an unusual strain of *T. tetraspora* having ostiolate ascocarps was isolated from 'Usar' soils (pH 10.5) collected from Lucknow — Kanpur road — in the month of August, 1975. The present paper describes this perithecial strain of the fungus.

Colony shows predominantly submerged, hyaline mycelium with abundant fruiting structures. Ascocarps are crowded and are of two types (i) ostiolate ascocarps or perithecia measuring 301—368 × 239.5—281.4 μm, (ii) cleistothecia, measuring 161—282 μm in diameter. Initially the colony was predominantly perithecial but upon repeated subculturing the number of perithecia was reduced and in the later stages only cleistothecia were produced. Both the perithecia and cleistothecia have similar wall structure. The wall is 3—5 cells thick and consists of polygonal pseudoparenchymatous, transparent or semitransparent cells.

The perithecium (pl. 1, fig. 1, 2, 3) has a well defined neck and the perithecial opening is lined by well developed periphyses. The asci (pl. 1, fig. 4) are four spored, clavate to subclavate with broadly rounded apex, shortly stipitate and deliquescing at an early stage, measuring 88—102 × 34—38 μm. Ascospores (pl. 1, fig. 5, 6) are

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Pl. 1: *Tripterospora tetraspora* RAI & a l. (mutant). — Fig. 1. Cleistothecium. — Fig. 2. Perithecium. — Fig. 3. Ruptured cleistothecium. — Fig. 4. Asci. — Fig. 5. Young ascospores. — Fig. 6. Mature ascospores

irregularly biserially arranged in the ascus and are bicelled, the upper cell is dark brownish black, ellipsoid measuring  $38-41 \times 24-26 \mu\text{m}$ . The lower hyaline cell remaining attached with the upper cell in the form of an appendage with a blunt tip.

No conidial state was observed. While describing the genus *Tripterospora*, CAIN (1956) postulated its position between *Podospora* and the typical members of Plectascales. LUNDQVIST (1969) placed *Tripterospora* in the family Sordariaceae of the order Sphaeriales. RAI et al. (1974) while studying in detail the morphology of the various strains of *T. tripterospora* isolated from 'Usar' soils have shown the extrusion of the ascospores in the form of cirruslike structures similar to the perithecial forms. This lends support to CAIN's hypothesis of the origin of the genus *Tripterospora* from an ostiolate perithecial form similar to *Podospora*. In the light of these earlier observations, the occurrence of a perithecial mutant of the genus *Tripterospora* is significant.

Fungal mutants are known to occur commonly in nature. MANIOTIS (1965) described a cleistothecial mutant of the perithecial fungus *Gelasinospora calospora*. RAI et al. (1968, 1972) have reported the natural occurrence of buff and tan mutants of *Aspergillus fumigatus* in 'Usar' soils and suggested that these mutants might have arisen through the impact of rigorous ecological conditions mainly the intense solar radiation during summer months on the largely bare and dry surface of this habitat. Indian 'Usar' (alkaline) soils from which this strain was isolated represents an extraordinary habitat for the growth and existence of micro-organisms in characteristically having high osmotic concentration, high pH, relatively high soil temperature, low moisture content and high incidence of solar radiation during summer months. It is likely that the perithecial strain of *T. tetraspora* might have evolved due to interaction of some of these above mentioned conditions.

### Acknowledgement

The author is deeply indebted to Prof. J. N. RAI, Head Division of Mycology and Plant Pathology, Department of Botany, Lucknow University, Lucknow, for guidance & encouragement.

### Literature Cited

- CAIN, R. F. (1956). Studies of Coprophilous Ascomycetes IV. *Tripterospora*, a new cleistocarpus genus in a new family. — Can. Journ. Bot. 34: 669—710.
- LUNDQVIST, N. (1969). *Tripterospora* (Sordariaceae s. lat., Pyrenomyces). — Bot. Notiser, 122: 589—603.
- MANIOTIS, J. (1965). A cleistothecial mutant of the perithecial fungus *Gelasinospora calospora*. — Mycologia. 57: 23—35.
- RAI, J. N., MUKERJI, K. G. & TEWARI, J. P. (1963). *Tripterospora tetraspora* sp. nov., new cleistothecial ascomycete. — Can. Journ. Bot. 41: 227—229.

- , TEWARI, J. P., AGARWAL, S. C. & JADHWANI, K. (1968). Natural occurrence of buff and tan mutants of *Aspergillus fumigatus* in Indian alkaline soils. — Can. Journ. Bot. 46: 1330—1331.
- & AGARWAL, S. C. (1971). Solar radiation induced mutations in *Aspergillus*. — Curr. Sci. 40 (21): 583—584.
- , TEWARI, J. P. & WADHWANI, K. (1974). Studies on *Tripterospora tetraspora*. — Nova Hedwigia. 47: 469—475.

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