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ASSOCIATION OF FUNGI IN TERMITE GUT

THE assoeiation of termites and fungi of the 'Termitarium' has been well documented[1–9], but the information regarding the occurrence of fungal strains in the termite gut is very scarce[10–11]. We report the presence of several species of fungi in the gut of worker termite, *Odontotermes obesus*. An attempt has also been made to compare the fungal flora of termite gut with those encountered on the infected wooden pole.

Worker termites *Odontotermes obesus* were obtained from a "sal" wooden pole in a sterile petri dish. Termites selected were from the same colony and of similar morphology. Surface sterilization of the whole termite body and the guts were carried out in absolute alcohol and/or mercuric chloride[13]. The inoculum consisted of 20 guts homogenized in 10 ml of 8·5% (w/v) aqueous saline solution and centrifuged to remove the cell debris. The uniform effluent solution (0·5 ml) was used for isolation of fungal strains.

Infested wooden pole from which termites were collected was used for enumeration of fungal association. Three specific layers, inner, middle and outer (0·5 g dry wt) were soaked separately in 50 ml of sterile water for an hour and then thoroughly shaken for 15 min in a conical flask using a magnetic stirrer at room temperature. The suspensions obtained were used as inocula.

Fungi isolated from the gut were : *Cunninghamella echinulata*, *Penicillium* Sp., *Fusarium moniliformae*, *Aspergillus amamori*, *A. flavus* and *A. nidulans*. The number of individual fungus colony er ml of the inoculum ranged from 4 to 10 (Table I). The inner layer of wooden pole consisted of *Paecilomyces fusisporus*, *Penicillium* sp., *Alternaria alternater* and *Cladosprorium* sp., *P. fusisporus*, *Penicillium* sp., *Cunninghamella echinulata*, *Rhizopus* sp. and *P. fusisporus*, *Penicillium* sp., *Cladosporium* sp., were isolated from the middle and outer layers of wooden pole respectively (Table II).

TABLE I

Fungi spp. *isolated from the gut of the worker termite* (Odontotermes obesus).

Results are average of six replicates

Fungi species	No. of individual fungal colonies/1 ml homogenized gut suspension
Cunninghamella echinulata	4
Penicillium sp.	10
Fusarium moniliformae	4
Aspergillus amamori	6
A. flavus	8
A. nidulans	6

The number of *Penicillium* colonies were most dominant on all the agar plates and they were invariably over 5000 counts per ml of supernatant suspension. *C. echinulata* and *Penicillium* sp. were isolated both from the termite gut and wood while *F. moniliformae* and three species of *Aspergillus* were recorded only from the termite gut. *P. fusisporus*, *A. alternater*, *Cladosprium* sp. and *Rhizopus* sp. were confined to tthe wooden pole.

Earlier findings[1–12] reported an entomophthoraceous fungus inside the tissues of *Coptotermes curvignathus*, *Conidiobolus* sp. from *Nasutitermes* and *Aspergillus glaucus*, *Aspergillus* sp., *Curvularia* sp., *Fusarium* sp., *Rhodotorula* sp. from the gut of worker termite *Odontotermes obesus*. The occurrence of *F. moniliformae* in the gut of worker termite is in agreement with the previous report[12]. However, contrary to the previous communications[10–12] *C. echinulata*, *Penicillium* sp. and three different species of *Aspergillus*

TABLE II

Fungi spp. encountered on the infected wooden pole. Results are average of six replicates

Specific layers	Fungi species	No. of individual fungal colonies/ gm dry wt./ wood
Inner	*Penicillium* sp.	Numerous*
	Paecilomyces fusisporus	200
	Alternaria alternater	700
	Cladosporium sp.	100
Middle	*Penicillium* sp.	Numerous*
	Cunninghamella echinulata	300
	Paecilomyces fusisporus	2000
	Rhizopus sp.	300
Outer	*Penicillium* sp.	Numerous*
	Cladosporium sp.	100
	Paecilomyces fusisporus	100

* Above five thousand counts.

have been isolated in the present investigation. Species of *Curvularia*, *Rhodotorula* and *Torula* were not recorded in our studies.

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ORIGIN OF TRISOMICS IN THE *SOLANUM NIGRUM* COMPLEX

THE present note deals with the origin and cyto-morphological characters of trisomics recorded in F_1 population of a cross between *Solanum nigrum* L. and *Solanum opacum* A. Br. and Bouche.

A comparison of morphological characters of natural Indian hexaploid *S. nigrum* and *S. opacum* showed that they differ mostly in habit and fruit character. The hexaploid *S. nigrum* was erect with purplish black fruits whereas *S. opacum* was prostrate with yellowish green fruits. Meiotic behaviour of chromosomes of hexaploid *S. nigrum* was normal with 36 bivalents at metaphase$_1$. At anaphase$_1$, there was 36 : 36 distribution of chromosomes at poles. In *S. opacum*, in about 75·00% of pollen mother cells, there were 36 bivalents at metaphase$_1$ while in 25·00% of the cells there was precocious separation of chromosomes of a bivalent resulting in formation of 35 bivalents and 2 univalents at metaphase$_1$, and at anaphase I, in about 62·00% of these cells, there was 37 : 35 distribution of chromosomes at poles.

About one hundred reciprocal cross pollinations were made between hexaploid *S. nigrum* and *S. opacum*. Sixty per cent of the crosses were successful producing several fruits with viable seeds.

The reciprocal hybrids (F_1) were alike in morphological characters. They were semi-prostrate and profusely branched with dark green leaves. The hybrids flowered profusely but produced a few fruits. The fruits were purplish black with several viable seeds. On the basis of the fruit size the F_1 plants were classified into two groups. The plants of group I produced large fruits whereas the plants of group II bore small fruits.

A preliminary cytological study of the plants of group I showed these to be hexaploids with $n = 36$ chromosomes. In about 90% of the cells $35_{II} + 2_I$ were observed while in about 10% of the cells $34_{II} + 1_{III} + 1_I$ were seen. The plants of group II were found to be trisomics with one extra chromosome ($2n = 73$). In about 65% of the cells $36_{II} + 1_I$