indicated that a minimum of 1 ml of 0.01 % amine is required for the maximum colour development and higher concentration of amine had no effect on the colour system. Hence 5 ml of 0.01 % amine in 1 N hydrochloric acid is recommended. A similar study of variation of coupling agent concentration indicated that 5 ml of 0.10 % solution of resorcinol in 2 N alkali provided the maximum colour development. The absorption spectrum of the colour system for different concentrations of nitrite (figure 1) showed that absorption maximum is at 555 nm. The colour system obeyed Beer's law over the concentration range 0–25 $\mu$g of nitrite.

*Interference studies*

The interfering effect of several cations and anions in the determination of nitrite is shown in table 1. A deviation of more than $\pm$ 0.02 from the absorbance of the solution without any interfering ion was taken as a sign of interference.

The interference of $Ca^{2+}$, $Mg^{2+}$, $Al^{3+}$, $Cd^{2+}$, $Zn^{2+}$, $Cu^{2+}$ was no longer observed in the presence of 2 ml of 0.05 M EDTA and 1 ml of 5 % triethanolamine solution. This mixture of solutions is recommended as a general masking agent to overcome the interference of most of the cations. There is no interference upto 1000 $\mu$g of $[SO_3]^{-2}$ and 400 $\mu$g of HCHO. However sulphide even at 10 $\mu$g level interfered. The interference of sulphide upto 100 $\mu$g can be overcome by the addition of 1 ml of 0.1 % $HgCl_2$ solution to the amine reagent before the addition of nitrite and centrifuging the precipitated HgS before the absorbance measurement.

Ferric ion interfered by precipitating as $Fe(OH)_3$ and the interference could not be overcome by the use of masking agents like EDTA, TEA, tartrate and citrate. However, this can be overcome by removing $Fe^{3+}$ as the hydroxide and then subjecting the solution to colour development. The method suffers from the interference of $Fe^{2+}$ and $Mn^{2+}$.

The molar absortivity at 555 nm is $3.8 \times 10^4$ litre mole$^{-1}$ cm$^{-1}$. The relative standard deviation for 10 $\mu$g of nitrite is $\pm$ 1 % for 10 determinations.

**Table 1** *Interference studies* ($NO_2^-$) = 10 $\mu$g

| Ions | Concentration ($\mu$g) | Remarks |
|---|---|---|
| $Mg^{2+}$, $Ca^{2+}$ | 2000 | Interfered by a fall in the absorbance |
| $Cd^{2+}$, $Hg^{2+}$, $Zn^{2+}$ $Cu^{2+}$, $Al^{3+}$ | 1000 | Interfered by a fall in the absorbance |
| $S^=$ | 10 | Interfered by a fall in the absorbance |
| $CO_3^{2-}$, $PO_4^{3-}$, $NO_3^-$ $SO_4^{2-}$, $Pb^{2+}$ | 3000 | No interference |
| $SO_3^{2-}$ | 1000 | No interference |
| HCHO | 400 | No interference |
| $Fe^{3+}$ | 500 | Interfered by a rise in the absorbance |
| $Fe^{2+}$, $Mn^{2+}$ | 100 | Interfered by a rise in the absorbance |

16 August 1985; Revised 25 March 1986

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## CHEIROPOLYSCHEMA FARMOSANA: AN ADDITION TO INDIAN FUNGI

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DURING one of the collection trips to the Western Ghats of India an interesting Hyphomycete was collected on dead fallen leaves of *Cinnamomum zeylanicum* which was identified as *Cheiropolyschema farmosana* Matsushima, hitherto not recorded from India. The genus *Cheiropolyschema* was first established by Matsushima[1] with a single species, *C. farmosana* collected on dead leaves of *Paulowniae kawakamii* from Taiwan. No further collections of this has been reported so far. The present collection of this monotypic fungus differs from the type in the absence of chains of conidiogenous cells, slightly bigger conidiogenous cells and conidia which are smooth walled. The fungus is briefly described and illustrated below.

The fungus forms effuse colonies on the leaf surface with immersed mycelium. The conidiophores are micronematous, subhyaline to pale brown with a single terminal conidiogenous cell resembling a swollen vesicle and 6–8 $\mu$ in diameter. The conidia are en-

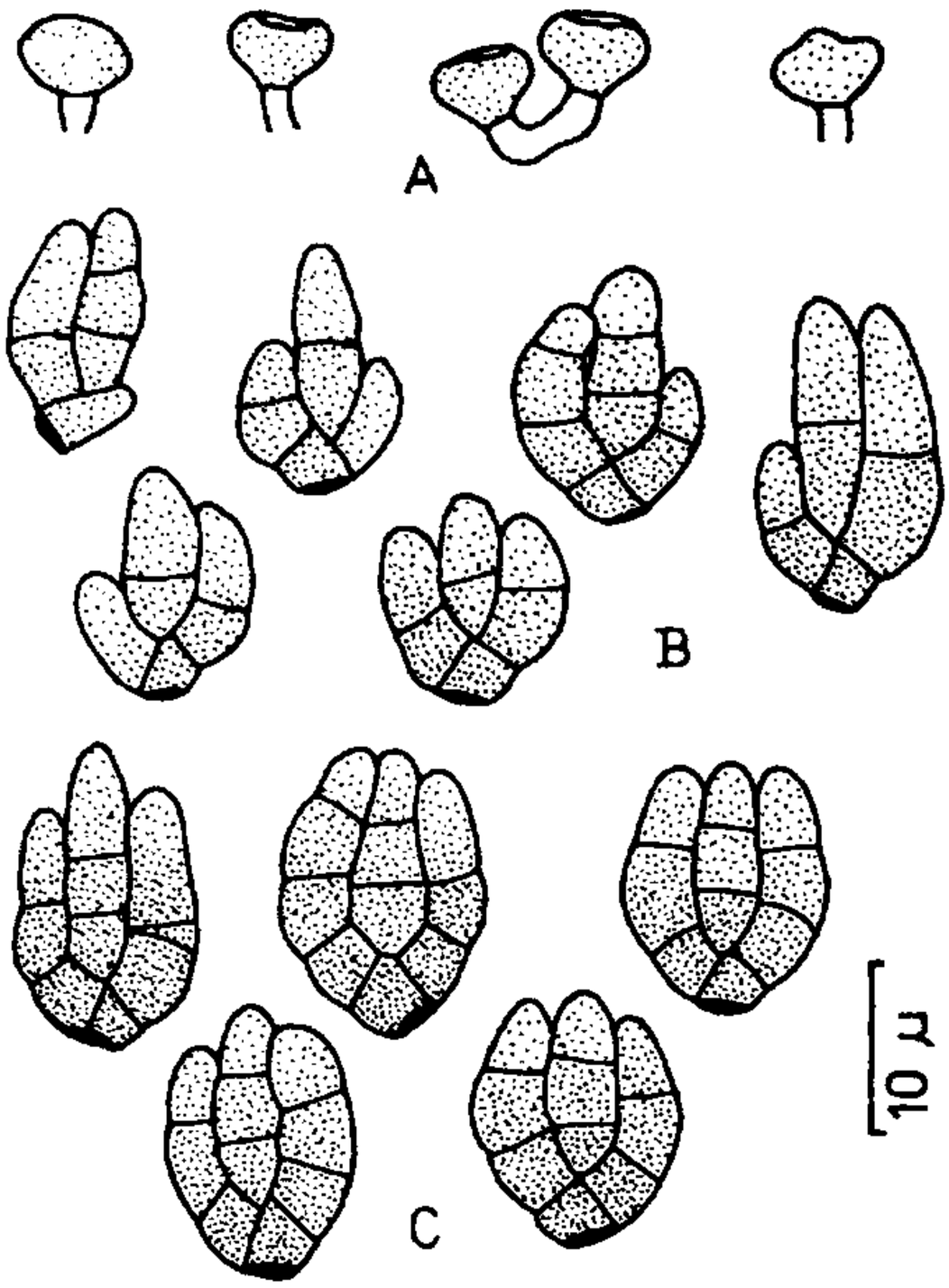


**Figure 1. A.** conidiophores with conidiogenous cells. **B.** Young conidia. **C.** Mature conidia.

teroblastic, monotretic developing singly from the tip of the conidiogenous cell, smooth, dark brown, 18–22 × 13–15 $\mu$, cheiroid with the three digits closely adpressed all along the length, 2–3 septate, slightly constricted at the septa, often with the middle arm slightly protruding over the other two lateral arms. The detached conidia bear a thick basal scar indicating the point of attachment on the conidiogenous cell which develops a depression around the pore after the conidium is shed.

Collected from litter of *Cinnamomum zeylanicum*, Nemmar (Karnataka State), India, B.P.R. Vittal, 12 November 1974, Herb. MUBL No. 2914.

The author is thankful to Dr B. C. Sutton and Dr P. M. Kirk of the CMI, Kew, England for their help in identification and to Prof. C. V. Subramanian for his comments.

6 February 1986

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# *IN VITRO* SELECTION OF NaCl TOLERANT CELL CULTURES IN *ORYZA SATIVA* L

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RICE is one of the most globally important cultivars. In India an area of nearly 4 million hectares of rice is affected by soil salinity. However, salinity is not necessarily incompatable with plant life. Selection of crop varieties of greater tolerance to salt environment will allow greater productivity from large saline lands. Many plants have been found to achieve the ability to grow under saline condition[1–4]. In the present investigation salt-tolerant cell lines of *oryza sativa* L cv Kiran and Madhu have been isolated by exposing the cultures to increasing levels of NaCl (0.5%, 1%, 2% and 3% w/v). The salt selected lines of Kiran and Madhu grew at 1% and 1.5% NaCl respectively.

Two cultivars of rice, Kiran and Madhu were selected for testing their salt-tolerance level from cultured callus tissues due to its high regeneration ability[5–6]. Cultures were raised from scutellar tissues of embryo of both the cultivars of Murashige and Skoog's[7] (MS) nutrient medium. The seeds were dehusked, sterilized with 0.1% $HgCl_2$ solution for 10 min, washed thoroughly with sterile-distilled water, the embryo part dissected out and cultured on the MS medium supplemented with different concentrations (1, 2 and 4 mg/l) of 2,4-dichlorophenoxy acetic acid (2,4-D). The callus tissues showed the best growth response when the medium was supplemented with 2,4-D (2 mg/l) + coconut water (cw, 15% vol/vol) + casein hydrolysate (CH, 500 mg/l).

About 2 g of callus tissues were transferred to 25 ml of liquid medium to initiate cell suspension. The liquid cultures were shaken at 100 rpm under continuous illumination. After 15 to 20 days, the suspension was filtered through a 200 $\mu$m pore size stainless steel mesh to separate the cell aggregates and the filtrate gently centrifuged. The cells were subcultured into a fresh liquid medium. Cell numbers were estimated by fixing the samples in equal volumes of 10% chromium trioxide solution at 70°C for 10 min and agitating it on a bench shaker of 25 min. This technique effectively separated the cells from the aggregates without any disintegration. The suspension was transferred to a haemocytometer slide and the cells present in randomly chosen microscopic fields were counted at a magnification of 100 times. From the mean of 50 counts the cell number per/ml was calculated. Cell