ON THE BENTHIC OSTRACODS FROM THE EAST COAST OF INDIA

THE ostracods form a well defined group of the class crustacea possessing a calcareous bivalved carapace. The geological records show that they occur from the upper cambrian onwards and hence their taxonomic and stratigraphic importance. There are a few published accounts on marine planktonic[1,4,4] and benthic[2,3] ostracods from marginal water bodies. So far there is no published account of the living benthic ostracods inhabiting the brackish and marine environments from Indian waters, despite their abundance in the marginal water bodies. It is the aim of authors to explore this neglected field and to contribute to our knowledge of the ostracods from the tropical waters.

The shallow back waters of Bhimilipatnam 35 km north of Visakhapatnam and of Balacheruvu about 15 km south of Visakhapatnam which apparently provide an excellent habitat for the settlement of microfauna have been investigated by the authors for their benthic ostracods.

Regular sampling of the bottom sediment was made at monthly intervals with a devise developel by Benson[5] from October 1976 at nine prefixed stations. Data on hydrographical and sedimentological parameters were also collected simultaneously.

During the period of investigation the water temperature ranged from 24° C (December) to 37° C (May), the dissolved oxygen content from 5·6 ml/l (July) to 10·9 ml/l (February) and salinity from 15·20‰ (November) to 44·35‰ (May) in the area under investigation. Some of the common forms encountered during the survey belong to:

Family: CYTHERIDAE

Actinocytheris sp; *Ambostracon* sp. *aff. C. packardi* (Brady 1868); *Carinocytheris stimpsoni* (Brady 1868). *Caudites rectangularis* (Brady 1869); *Campylorythere* sp.; *Cytherella pulchara* (Brady 1880); *Cytherepteron alatum* (G.D. Sars 1866) *"Cythere" daruinii* (Brady 1868); *Illyocypris gibba* (Ramdohr 1808); *Loxoconcha* sp. *aff. L. sinensis* (Brady 1868); *Limnocythere* sp.; *Neonesidea foveolata* (Brady 1868); *Tanella gracilis* (Brady 1868) and *Tanella* sps.

The preliminary studies on the shell characteristics and soft parts of the bodies of the species listed above indicate that some of the species recognised appear to be new to science. A more detailed account on the systematics and distribution of these ostracods inhabiting this area in relation to hydrographical and sedimentological parameters will be published elsewhere.

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STUDIES ON SHOOT BUD FORMATION *IN VITRO*

I. Effect of Immersing Embryo of *Dendrophthoe falcata* in Kinetin Solution

CYTOKININS promote shoot bud formation in a number of plant tissues cultured *in vitro*[1]. In the endosperm cultures of Taxillus vestitus Johri and Nag[2] showed that cytokinins induce, rather than enhance, bud formation. Similar induction of bud formation in the cudtures of leaf[3] and embryo[4] of *Dendrophthoe falcata* has also been reported. In these experiments the cytokinins were incorporated in the growth medium as is customary in tissue culture technique. In the present communication we describe our preliminary findings on the effect of immersing the explants in kinetin solution prior to inoculation in the tissue culture medium.

Mature embryos were dissected out aseptically from ripe fruits of *Dendrophthoe falcata* (L.f.) Ettings. and immersed in 10 ml of autoclaved kinetin solution (2 mg/ml). After immersion for 1–60 minutes, the embryos were picked up individually and inoculated on modified White's medium (WM)[5] devoid of any phytohormone. For comparison embryos were also inoculated on WM supplemented with various concentrations (2, 5 or 10 ppm) of kinetin. At least 24 cultures in test-tubes were raised for each treat-

ment and each experiment was repeated thrice. The cultures were maintained at 25 ± 5° C in diffuse light under 50–60% relative humidity.

Shoot buds did not develop in the controls, *i.e.*, on explants inoculated either directly on WM or after being immersed in autoclaved distilled water. On the other hand, 1–15 shoot buds differentiated from the radicular end and hypocotyl of embryos immersed in kinetin solution prior to inoculation on WM (Fig. 1).

FIG. 1. *Dendrophthoe falcata* (L.f) Ettings. 4-week-old culture of embryo which was immersed in kinetin solution (2 mg/ml) for 5 minutes prior to inoculation on WM. Note the shoot buds differentiated from the radicular end and hypocotyl, × 6·2.

From embryos immersed in kinetin solution for 1–5 minutes buds appeared after about a week of inoculation. However, when they were immersed for a longer time (20, 40 or 60 min.), bud differentation occurred only after about 2 weeks. Best result was obtained by immersion for 15 min. in 2 mg/ml kinetin solution: after 4 weeks buds differentiated in about 85% cultures of embryos, and the maximum number of buds developed per explast was 17. Some of these buds grew into shoots after another 2–3 weeks. Buds also differentiated on the embryos inoculated directly on WM supplemented with kinetin (2, 5 or 10 ppm). These buds were comparable in morphology to the buds which differentiated after immersion. The minimum time required for the buds to develop in such cultures, however, was about 12 days.

It is interesting to note that kinetin can induce bud differentiation in explants immersed in it even for one minute. This shows that the action of kinetin in bud initiation is very quick. As far as we know, this is the first report of immersion of explant in the phytohormone solution prior to its inoculation in the medium of tissue culture. This technique cas profitably be utilised to study the mechanism of action of phytohormones specially during organogenesis.

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POLYMITOSIS IN THE MICROSPORES OF ELEPHANT FOOT YAM

Amorphophallus campanulatus, otherwise known as elephant foot yam, is an important subsidiary food crop found in tropics. While screening the germplasm a clone was isolated, which showed 52·0% pollen sterility while the other clones showed pollen fertility above 90%. Microsporogenesis was studied in detail to identify the causes of high pollen sterility.

The PMCs showed 14 bivalents at diakinesis (Fig. 1) and MI and later divisions were also regular resulting in normal tetrads which disjuncted into microspores. About 50% of the microspores developed in the usual way. The microspore nucleus divided into large vegetative and a small well stained generative nuclei. At the time of anthesis, the generative nucleus divided and the pollen grains became trinucleate (Fig. 2).

The remaining microspores behaved in a different manner. When the microspore nucleus divided the resultant nuclei were identical in shape and size and frequently, the second division followed immediately (Fig. 3). The division proceeded further resulting in microspores having upto six nuclei and the microspores began to show vacuolation and incipient exine could be also discernible (Fig. 4). Later, the microspore wall differentiated into distinct exine and intine (Fig. 5).

Occasionally cross wall formation took place immediately after the first division (Fig. 6) and it continued further and a number of microspores was found having as many as 5 cells (Fig. 7). Such multicelled microspores subsequently developed deep clemts (Fig. 8) and the individual cells get separated. The occurrence of micropollen with single nuclei along with normal pollen grains in the mature anthers (Fig. 9) further demonstrated that they were the product after the liberation from the multicelled microspores. In