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A NOTE ON THE EFFECT OF VARIOUS GROWTH REGULATORS ON *IN VITRO* CULTURES OF *EUGENIA CARYOPHYLLATA* AND *EUCALYPTUS CITRIODORA*

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Callus development was achieved in *Eugenia caryophyllata* when cotyledons were placed on half strength of MS medium supplemented with 1.0 mg/l 2, 4-D and also when NAA (2.0 mg/l) was used in combination with various concentrations of BAP (0.5–10 mg/l). Shoot tips of *Eucalyptus citriodora* were cultured on basal medium supplemented with various concentrations and combinations of growth hormones. Presence of 0.1 mg/l NAA with various concentrations of BAP (0.1 – 5 mg/l) promoted development of shoot buds in addition to callus formation.

Keywords: *Eugenia caryophyllata*; *Eucalyptus citriodora*; Callus; Cotyledons; Growth hormones; Shoot apex; Shoot buds.

In vitro propagation of trees is important for the mass scale multiplication and conservation of elite and rare or endangered species. This article deals with *in vitro* culture of *Eugenia caryophyllata* and *Eucalyptus citriodora*.

Explants such as immature cotyledons in *Eugenia* and shoot tips in *Eucalyptus* were taken from plants and inoculated onto half strength Murashige and Skoog's (1962), MS medium +60gm/l sucrose+400 mg/l glutamine +100 mg/l ascorbic acid (Litz, 1984), supplemented with one or more of the following growth hormones–2, 4-Dichlorophenoxy acetic acid (2 4-D), 6-Benzyl aminopurine (BAP) and Naphthalene acetic acid (NAA). The cultures were maintained at 22±2°C. To control browning of the explants caused by polyphenolic oxidation, method formulated by Broome and Zimmerman (1978) was used in which the explants were transferred to fresh medium, twice a day for 2-3 days, and the flasks were kept under continuous dark conditions in *Eugenia*. After a week these flasks were kept under continuous light (150 lux). For *Eucalyptus* a photoperiod of 16 hrs with 8 hrs. dark period was maintained.

Basal medium supplemented with 1.0 mg/l 2, 4-D resulted in slight call-

Figs. 1–3

1. Callus formation on half strength MS+3.0 mg/l NAA+2.0 mg/l BAP in *Eugenia* with cotyledon as explant.
2. Differentiation of shoot buds and callus formation on half strength MS+0.1 mg/l NAA+ 2.0 mg/l BAP in *Eucalyptus* with shoot tip as explant.
3. Callus formation on half strength MS + 0.4 mg/l NAA+5.0 mg/l BAP in *Eucalyptus* with shoot tip as explant.

(C=callus, SB=Shoot bud)

using when immature cotyledons were used as explants in *Eugenia*. NAA (3.0 mg/l) induced slight callusing with various concentrations of BAP (0.5–10 mg/l) (Fig. 1). Callus formation was observed after 2–3 weeks of incubation. Although the amount of callus produced was meagre. This may be due to leaching of phenolic compounds onto the medium Development of callus in clove was also reported by Mathew *et al* (1987). Organogenesis from callus cultures of *Syzygum cumini* have been reported (Mathur *et al.*, 1990, in press).

Shoot apex of *Eucalyptus* was cultivated on half strength MS Medium supplemented with 1.0 mg/l charcoal, 0.1 mg/l NAA and various concentrations of BAP (0.1 – 5.0 mg/l) Callus formation was observed with 2.0 mg/l BAP after the second week. Shoot buds were formed at the periphery of the callus during the fourth week (Fig. 2). Regeneration of shoot buds in *Callistemos viminalis* through nodal cultures has been reported by Shipton (1982). Callusing and shoot bud formation was seen in 0.1 mg/l NAA + 5.0 mg/l BAP and 0.4 mg/l NAA + 5.0 mg/l BAP combinations (Fig. 3). Hence, differentiation induced on a medium with low auxin and high cytokinin as favouring morpho-

sent study serves to demonstrate that growth hormones in different concentrations can influence the direction of morphogenesis even within the same species and while using the same explant.

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