In vitro Culturing of Coconut Embryo

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FOR culturing the embryos of coconut several media were examined for their suitability. In Y3 mineral medium the growth of the embryo was better. The enlargement of the embryo was noticed on the eleventh day and the embryo was differentiated into shoot when the nutrient medium was incorporated with kinetin. Adventitious root initiation was found when nutrient medium was supplemented with NAA.

Tissue culture offers a tool for international exchange and conservation of germplasm material. The *in vitro* culture technique is useful especially in plants like coconut (*Cocos nucifera* L) where the seed material is quite large and difficult to transport to long distances. The spoilage of seed material is also common in coconut during transport as they are prone to attack by many saprophytic fungi.

Guzman (1977) and Nurita Toruan (1980) succeeded in developing seedlings from coconut embryos after several stages of *in vitro* culturing in liquid and solid media. An attempt has been made to culture the coconut embryo under *in vitro* conditions and the results are presented.

Materials And Method

Embryos were excised especially from mature nuts of coconut hybrid Tall X Gangabondam. The embryos were surface sterilised with 0.1% mercuric chloride solution for five minutes and cultured in growth media like Whites medium (Balaga and de Guzman 1971), Heller medium (Eevwens 1976), Murashige and Skoog medium (de Guzman 1976) and Y3 mineral medium (de Souze 1983) supplemented with kinetin 1 mg^{-1} and Napthalene acetic acid 1.5 mg^{-1}. The test tubes inoculated with the embryo in different media were incubated in room temperature at 25 ± 1°C for 10 days. The light intensity was maintained at 2000 lux for 14/10 hour day/night.

Results and Discussion

Of the four media tested Y3 mineral medium was found to be better for the growth of the coconut embryos (Table 1) . Frequent subculturing in the differential medium promoted high shoot differentiation and thereby promoting the formation of leaves. The shoot cultures on transfer to Y3 medium supplemented with Napthalene acetic acid 1.5 mg^{-1} and charcoal 0.1% induced the root formation.

Embryo culturing is an inexpensive method of producing large scale clones of varieties in coconut. Through this method the introduction of new varieties of coconut has become not only simple but also virtually eliminates the tedious and time consuming phytosanitary measures.

It is evidently seen from the results that Y3 mineral medium was found to be the best for the growth and development of coconut embryos. The medium supplemented with Kinetin have shown better initiatiation of leaves while NAA/ charcoal induced the rooting of coconut under *in vitro* condition. Nurita Toruan(1980) succeeded in developing coconut seedlings from embryo after culturing in liquid as well as solid medium. Similar results have been earlier reported by de Guzman *et al* (1975). The present results are in line with the above findings.

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TABLE 1

MORPHOGENETIC RESPONSE OF COCONUT EMBRYOS IN DIFFERENT CULTURE MEDIA

Medium	Embryo response	Per cent response (Range)
White	Elongation of embryos with root shoot primordia. No further growth	8-10
Nitsch	No response	- 0 -
MS	No response	- 0 -
Y3	Elongation of embryos followed by root shoot differentiation	18-20