

(05-2-02)

In vivo cuttings and comparison of anatomical characteristics in vitro shoots of *Eucalyptus pellita*

Kim Ji Ah, Moon Heung Kyu and Kim Yong Wook

Division of Biotechnology, Korea Forestry Research Institute (KFRI),
Suwon 441-350, Korea

Objectives

Studies on in vivo cuttings and histological comparison in order to improve the rooting efficiency and survival rate in *Eucalyptus pellita*

Materials and Methods

1. Material

- Plant material : In vitro raised shoots (length 5cm)
- Artificial soil mixture: vermiculrite, peatmoss, perlite and TKS2
- Rooting substance : 100 ppm IBA with talc.
- Histological method : dehydration using alcohol series, embedment with Technovit 7100

2. Methods

Shoots proliferated in vitro were treated with IBA at the explant base, planted onto artificial soil and cultivated in greenhouse under high humidity condition. The cuttings were picked up periodically at 3 day interval and the rooting zone was examined histologically.

Results and Discussion

The highest rooting percentage (93%) was obtained when vermiculrite was used as the supporting soil. IBA treatment resulted in enhanced rooting rate and root development compared to control. The anatomical observation showed that the process of adventitious root initiation and development proceeded as follows; On the 1st day of cuttings, cuttings showed a typical tissue organization without any cell divisions. After 3 days, the number of dividing cells increased markedly, and meristemoids were evident between primary phloem and vascular cambial region. On the day 6, the meristemoids developed outwards showing increased cell volume and numerous cell division. On the day 9, meristematic tissue progressively formed from dedifferentiated cells and polarized cells were visualized giving rise to typical pointed shape of root primordium. On the twelfth day, two or more adventitious roots emerged from the surface of the basal part of shoots. This results suggest that in vivo cuttings could be used for an efficient micropropagation technique of the species.