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In-vitro regeneration of *Stewartia koreana* Nakai through somatic embryogenesis

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Objectives

Previously we investigated the effects of several plant growth regulators(PGRs) on somatic embryogenesis of *Stewartia koreana* Nakai. In the present study, we have investigated several cultural factors, including PGRs, activated charcoal and developmental stage of seeds to develop an efficient regeneration system for the species via somatic embryogenesis.

Materials and Methods

Mature seeds were collected from Hwasung, Gyeonggido province in October, 2002. The seeds were then cut open to extract cotyledons. The cotyledons were cultured on MS media supplemented with 28 different combinations of BA, NAA and 2,4-D. The levels of PGRs were 0.1, 0.5 and 1.0 mg/L for BA and 0.1, 0.2 and 0.5 mg/L for NAA and 2,4-D. Various shapes of somatic embryos formed with different frequency were counted with regard to developmental stages. The media effect

of MS and 1/2MS containing 0.1% or 0.05% activated charcoal on germination and rooting were also examined.

Results and Discussion

During callus formation, calli with different colors of callus were observed. They appeared as bright green, yellow white, bright yellow and so forth. Embryogenesis was observed mostly on the callus showing bright yellow color which was treated with 0.5 mg/L BA and 0.5 mg/L 2,4-D. From the callus, various forms of somatic embryos were induced according to different levels of PGRs. The highest frequency of somatic embryos was obtained by treatment of 0.5 mg/L NAA and 0.1 mg/L BA. These types of embryos could be classified as bowl-shaped, bowling pin-shaped and torpedo-shaped. Each shape showed different germination rate. The torpedo-shaped embryos germinated best when encapsulated with alginic acid. Germinating embryos could be subcultured on 1/2MS medium with 0.05% activated charcoal for further growth.

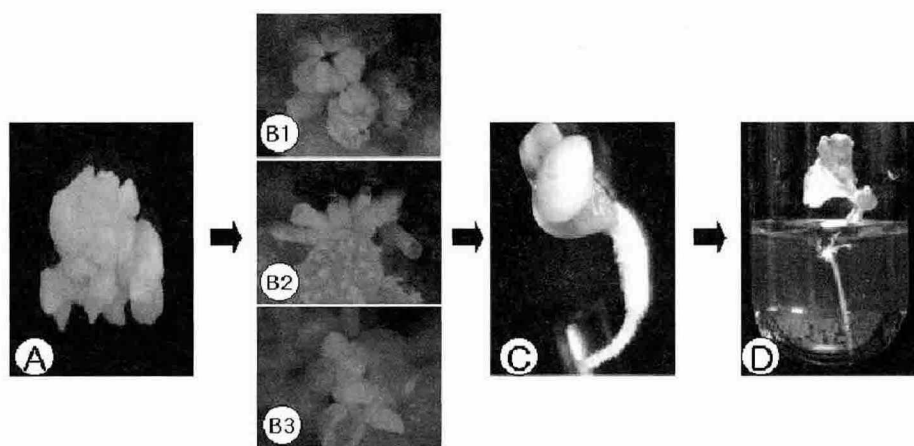


Figure 1. Plantlet regeneration through somatic embryogenesis of *Stewartia koreana* Nakai.

- A: Embryogenic callus showing bright yellow color
- B: Various developmental stages of somatic embryos
- C: Germinating somatic embryo from encapsulated bead with alginic acid
- D: Regenerated plantlet