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Effect of ABA and Activated Charcoal on Somatic Embryo Development and Plant Regeneration from Suspension Cultured Embryogenic Cell Aggregates of *Kalopanax pictus*

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Objectives

Kalopanax pictus is a tree species traditionally used as folk medicine as well as edible vegetable. We have developed an effective micropropagation system for the species by use of secondary somatic embryogenesis. In this study we tested the effect of ABA and activated charcoal on somatic embryo development and plant regeneration using suspension cultured embryogenic cell aggregates.

Materials and Methods

Embryogenic cell clusters including secondary embryos were harvested from germinating somatic embryos and subcultured on half strength MS liquid medium with 2% sucrose. The cultures were bi-weekly harvested and cultured on 1/2MS solid medium containing various concentrations of ABA with 0.05% activated charcoal (AC) or without AC to induce normal embryo development and plant regeneration. After 4-6 weeks in culture initiation, different developmental stages of embryos were induced. The cultures were subcultured onto 1/2MS medium with 0.02% AC for plant conversion. Converted plantlets were transplanted on various artificial soils and acclimatized in greenhouse.

Results and Discussion

Embryogenic cell aggregates in suspension culture were able to undergo normal embryo development on ABA treated medium. However, both embryo germination and plant conversion appeared to be influenced by activated charcoal treatment. Relatively normal embryo development could be achieved in all ABA treated media, whereas normal embryo development and plant were observed in AC treatment, especially up to 0.2 mg/L ABA. Plantlet regeneration didn't occur at 0.5 mg/L ABA even with AC treatment. While most of the regenerated plantlets revealed single or dicotyledons, some of them were triple or tetrad cotyledons. Plant survival rate after transfer to artificial soils were varied by different soil mixture. Generally, survival rate increased in two or three different soil mixtures compare to a single soil type. Based on above culture system, we were able to induce cyclic somatic embryogenesis and plant regeneration in *Kalopanax pictus* irrespective of seasons.

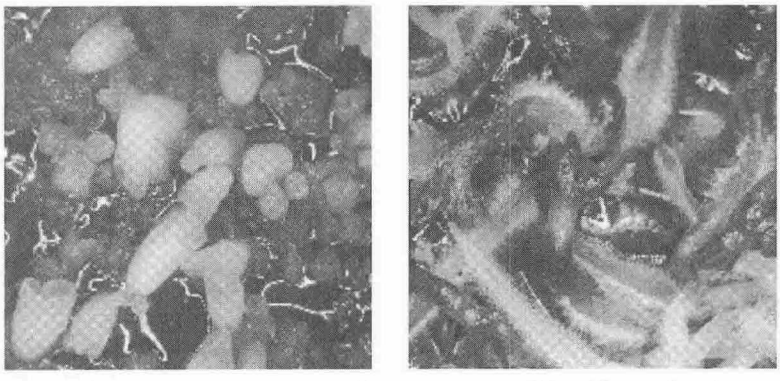

Figure 1. Cyclic somatic embryogenesis and plant regeneration of *Kalopanax pictus* (left- different developmental stages of somatic embryos cultured on 1/2MS with 0.2mg/L ABA.; right - regenerated plantlets cultured on 1/2 MS medium with 0.2mg/L ABA and 0.05% activated charcoal).

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