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Possibility of Sugarcane Synthetic Seed Production

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Abstract

Sugarcane (*Saccharum officinarum* L.) is well known as an extremely important crop plant. Using the stem of mature sugarcane has been the only practical means of propagating sugarcane. This method is vary expensive in term of labor costs and can also produce problems in term of spreading virus diseases such as Fuji disease, bacteria diseases such as red rot and the main fungal disease of smut. A model system of synchronous somatic embryos production combined with formation of synthetic seeds was studied for sugarcane. Compact and white embryogenic callus developed from portion of young leaf-rolled cultured on Murashige and Skoong agar basal medium supplemented with 3 mg/l 2,4-D, 50 mg/l cystein and 5 % coconut water. Embryogenic cell suspension culture were established by placing 3 months old embryogenic callus to liquid Murashige and Skoong basal medium supplemented with 3 mg/l 2,4" D, 10 % coconut water and 400 mg/l casein hydrolysate. The suspension culture were subcultured at 7 days interval by transferring 10 ml of the middle portion of suspension added to 25 ml of fresh medium. Somatic embryos developed after 6 weeks when transferred embryogenic cell to fresh medium without 2,4-D under 16-h photoperiod. Individual somatic embryo was encapsulated by 3 percent sodium alginate was approximately 4–6 mm in diameter. The germination of synthetic seeds were 60 % on Murashige and Skoong medium. Germination sugarcane synthetic seeds produced normal plantlet. This result indicated that somatic embryos from cell suspension culture could produced a lot of synchronized somatic embryos in short time. Therefore more research for better technique might be suggested.

Keywords: Embryogenesis, somatic embryo, sugarcane, synthetic seed

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