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Enhanced eleutherosides accumulation by methyl jasmonate in bioreactor culture system of *Eletherococcus chiisanensis*

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Objectives

The aim of this work is to investigate effect of methyl jasmonic acid (MJ) treatment on the eleutheroside accumulation in *in vitro* regenerated plantlets of *Eletherococcus chiisanensis*.

Materials and Methods

1. Material

Plant - *Eletherococcus chiisanensis* (Zygotic embryo-derived embryogenic callus)

2. Methods

Cell suspension culture : Zygotic embryo-derived embryogenic callus of *E. chiisanensis* was induced according to the protocol of Choi et al. (1999) and maintained in MS liquid medium supplemented with 1 mg/L 2,4-D and 30 g/L sucrose.

Bioreactor culture : Cotyledonary embryos were inoculated in balloon type bubble bioreactor and the medium was aerated at 0.1 vvm to give a homogeneous culturing.

MJ treatment : The cultured biomass produces were treated with MJ up to 10 mg/L and cultured for 3 weeks.

HPLC analysis : The eleutheroside fraction was analyzed using an HPLC system with a NovaPak C18 column, eluting with water/acetonitrile (from 95:5 v/v to 45:55 v/v over 46 min) at 0.8 ml/min. Eleutherosides were detected at 220 nm.

Results and Discussion

High frequency somatic emrbyogeneis was achieved through suspension culture of embryonic cells in hormone free MS liquid medium supplemented with 30 g/L sucrose. Cotyledonary somatic embryos were germinated, and converted into plantlets following a pretreatment of embryos with 20 M gibberellic acid and subsequent transfer to a 10 L airlift bioreactor. Eleutheroside B, E and E1 were quantified in the embryos and plantlets using HPLC analysis. MJ treatment enhanced the eleutherosides accumulation in *in vitro* plantlets. Optimum concentration of MJ was found to be 5 mg/L for maximum accumulation of eleutherosides.

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