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Enhanced Production of Paclitaxel in Sodium Butyrate-Supplemented Suspension Culture of Taxus chinensis

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Objectives

To investigate the effect of sodium butyrate on the stimulation of secondary metabolites in plant cell cultures, and to develop mass production process for paclitaxel.

Materials and Methods

1. Plant materials : Suspension culture of Taxus chinensis
2. Methods: Cell culture, sodium butyrate treatment, Paclitaxel extraction and analysis, Genomic DNA analysis

Results and Discussion

Production of paclitaxel was increased about 2 folds when 1 mM of sodium butyrate was added to the culture at 7 days after inoculation. Cell growth was also facilitated with 1 mM of sodium butyrate treatment. At higher concentration of sodium butyrate, however, programmed cell death was induced. Paclitaxel production were further enhanced with repeated treatment of sodium butyrate. Production of other taxanes were also increased about 1.6 to 9 folds with sodium butyrate treatment. Further experiments are undergoing to elucidate the possible mechanism of sodium butyrate-mediated enhancement of secondary metabolites.

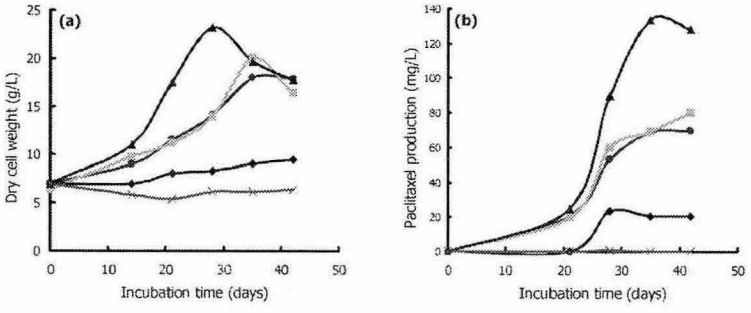

Fig. 1. Effect of sodium butyrate concentration on the cell growth (a) and the paclitaxel production (b) in the suspension culture of T. chinensis. Sodium butyrate was added to culture medium at 7 days after inoculation. -●- , untreated control; -■-, 0.5 mM; -▲-, 1 mM; -◆-, 5 mM; -X- 10 mM of sodium butyrate.

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