Studies on Tissue Culture of *Angelica Dahurica Var Formosana*

I. Callus Induction And Medium Evaluation

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Summary

The production of secondary metabolites from suspension cell culture system is one of the most promising methods in medicinal industry. The cells from callus or suspension cultures not only grow faster and the products produced can be extracted more easily than cells from the intact plants, but also the quantities of the products produced are much higher than those of the field-grown plants. The tissue or suspension cell culture techniques have made industrial production of some natural products possible.

Bai-Zhi (*Angelica dahurica*) was first recorded in Shen-Nung-Pen-Ts’ao-Ching under middlor category and was also recorded in the successive Pen-ts’aos of the descending dynasties. It has been used for the cure of headache. Recently it has also been used for treating a skin disease, Yin-Hsieh Ping with good healing effect. The component imperatorin of Bai-Zhi has been suggested as the major active ingredient for healing the skin disease. The purpose of this study was to establish the tissue culture system including callus induction from petiole and to establish the suspension culture for the production of imperatorin. It was found that the soft and light-yellowish callus from petiole of *A. dahurica* could be induced on solid medium containing MS basal salts supplemented with 1 mg/l 2,4-D, 0.5 mg/l kinetin and 3% sucrose. The callus could be maintained by successive culture on medium containing MS basal salts, 0.25-2 mg/l 2,4-D, 0.5 mg/l kinetin, and 3% sucrose, solidified with 1.2% agar at pH 5.7. For developing a finely dispersed cell suspension culture, the callus was cut and cultured on a medium containing 0.25-0.5 mg/l 2,4-D, 0.5 mg/l kinetin, 3% sucrose and pH 5.2 and shaking at 100 rpm. Analyses by TLC and HPLC indicated that both callus and suspension cells contained imperatorin and byak-angelicin. Although the content of imperatorin in callus and suspension cell was lower than market products and wild species.

Key words: *Angelica dahurica*, Callus, Suspension culture, Secondary metabolites.

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