Establishment of *Croton stellatopilosus* Suspension Culture for Geranylgeraniol Production and Diterpenoid Biosynthesis

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Diterpenoids in higher plants are biosynthesized from isoprene units obtained from two distinct pathways: the mevalonate pathway and the deoxyxylulose phosphate pathway. The metabolic partitioning of both pathways in plant species is dependent upon the type of culture. In order to study the diterpenoid biosynthesis in *Croton stellatopilosus* cell culture, callus culture was firstly induced from *C. stellatopilosus* young leaves in Murashige and Skoog (MS) medium in the presence of 1.0 mg/l 2,4-dichlorophenoxyacetic acid (2,4-D), 1.0 mg/l benzyladenine (BA), 3% (w/v) sucrose and 0.8% (w/v) agar. The suspension culture was further induced from its callus in the same medium without gelling agent. Detection of diterpenoid accumulation by gas chromatography-mass spectrometry revealed that a cell culture could accumulate a low amount of geranylgeraniol (GGOH) and a high content of fatty acids and phytosterols. To improve the GGOH production, the culture conditions were optimized by medium manipulation in terms of hormonal factors. The growth rates of cell cultures were similar in all kinds of media. The GGOH production curve indicated that GGOH plays an important role as a primary metabolite in the cell culture. The optimum medium for GGOH production was MS medium supplemented with 2.0 mg/l 2,4-D and 2 mg/l BA that could produce GGOH with a yield of 1.14 mg/g FW.

Key words: Croton stellatopilosus, Geranylgeraniol, Suspension Culture