

Mass Production of Paclitaxel by Plant Cell Culture

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Paclitaxel is a diterpene alkaloid derived from the yew (*Taxus* sp.) tree and it is used for treatments of ovarian, breast cancer and Kaposi sarcoma etc. Plant cell culture has been known as the attractive alternative that could overcome many limitations of extracting paclitaxel from natural resources. However, the major obstacle to commercialization has been the low yield of paclitaxel from plant cell culture.

We developed efficient paclitaxel production process in suspension culture of *Taxus chinensis* and achieved higher level of paclitaxel production. In order to optimize paclitaxel production in plant cell culture, effects of major medium components, various kinds of elicitors and stress factors on paclitaxel production were investigated. Localization of paclitaxel and engineering simulation of bioreactor operation were conducted to further optimize the production process in large-scale bioreactor.

Ultimately, we succeeded in large-scale production of paclitaxel in 32 m³ bioreactor in Taejon plant. Genexol® (brand name of paclitaxel produced by Samyang Genex) is commercially available now.