

Expression of Human Growth Hormone in transgenic rice cell suspension culture

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Abstract

Human growth hormone(hGH) is a pituitary derived polypeptide with biological activities such as protein synthesis, cell proliferation and metabolism. Due to the variety of biological activities, the hGH has therapeutic applications in the treatment of dwarfism, bone fractures, skin burns, and bleeding ulcers. Because hGH is a non-glycosylated protein, prokaryotic expression systems such as *Escherichia coli* are preferred to the production of hGH. The cDNA encoding the human growth hormone(hGH), was synthesized based on the known 191 amino acid sequence. Its codon usage was optimized for a high level expression in rice¹⁾. The hGH was cloned and expressed successfully using a plant expression vector that containing a rice α -amylase 3D promoter²⁾. Regulated expression and secretion of human growth hormone protein achieved using the promoter, signal peptide and terminator from a rice alpha-amylase gene, α Amy3D. The Ramy3D gene is expressed in response to sugar deprivation. The human growth hormone gene was expression and secretion of protein was observed in transgenic rice suspension culture by Western blot analysis.

References

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