

## Enhanced production of recombinant hGM-CSF in transgenic rice suspension cells by co-expression of proteinase inhibitor

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### Abstract

Granulocyte-macrophage colony stimulating factor (GM-CSF) is a cytokine that stimulates the production of granulocytes, macrophages, and white blood cells. The recombinant human GM-CSF has been previously produced from N44-08 transgenic rice suspension cells (Shin *et al.*, 2003). However, the amount of hGM-CSF accumulated in the culture medium dropped quickly from its maximum of 120 mg/L (at 13 days after incubation) by secreted proteinases. In order to stabilize the secreted hGM-CSF, the chymotrypsin(CI) and trypsin(TI) inhibitor genes from *Nicotiana glauca* were introduced into the N44-08 transgenic rice cell expressing hGM-CSF. The co-transformed rice suspension cells increased the production of hGM-CSF by 2-fold compared to N44-08 transgenic suspension cell, which transformation of only hGM-CSF gene (This work was supported by a grant from the NRL program of the Korean Ministry of Science and Technology. Kwon, T.-H. have been supported by a Korea Research Foundation Grant (KRF 2002-070-C00069).

### References

1. Shin Y. J., Hong S. Y., Kwon T. H., Jang Y. S., Yang M. S. (2003), High level of expression of recombinant human granulocyte-macrophage colony stimulating factor in transgenic rice cell suspension culture, *Biotechnol. Bioeng.* **30**, 82(7), 778-83.
2. Elizabeth A. Miller, Marcus C. S. LEE, Angela H. O. Atkinson and Marilyn A. Anderson (2000), Identification of a novel four-domain member of the proteinase inhibitor II family from the stigmas of *Nicotiana glauca*, *Plant Molecular Biology* **42**, 329-333.