

## Enhanced expression in rice cell of the interleukin-18 by modification of its codon usage

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### ABSTRACT

Interleukin-18, previously known as interferon-inducing factor (IGIF), is one of the most well characterized and important cytokines that contribute to the host defense, cytokines capable of up-regulating IFN production should play a key role in the host defenses. Recombinant human interleukin-18(hIL-18) has been previously produced in tobacco cell suspension cultures. However, hIL-18 accumulated in the culture medium to only 140 ug/ml. The gene encoding hIL-18 was resynthesized to adapt its codon usage for expression in plants. The codon-optimized synthetic hIL-18(shIL-18) gene was carried by a plant expression vector. Regulated expression and secretion of shIL-18 from this vector achieved using the promoter, signal peptide, and terminator from a rice alpha-amylase gene *Amy3D*. Using particle bombardment-mediated transformation, shIL-18 gene was introduced into the calli of rice(*Oryza sativa* L.). This shIL-18 increased the production of hIL-18 by 10-fold compared to previous results. (This work was supported by a grant from the Next generation new technology development program of the Korean Ministry of Commerce, Industry and Energy. Kwon, T.-H. have been supported by a Korea Research Foundation Grant (KRF 2002-070-C00069).

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