

Small interfering RNA-mediated interference of rice α -amylase gene expression and accumulation in rice cell suspension culture

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Abstract

RNA interference (RNAi) is a powerful tool for specifically silencing gene expression in diverse cell types. RNAi is mediated by 21-nucleotide small interfering RNAs (siRNAs), which are produced from larger double-stranded RNAs (dsRNAs) *in vivo* through the action of Dicer, an RNase III-family enzyme. Rice α -amylase is produced in the portion of the 43% of total secreted protein during rice cell suspension culture. This secreted amylase has problems to produce and purify the recombinant proteins. Here we report the use of siRNA to rice α -amylase gene expression and accumulation in rice cell suspension culture. Recent work has demonstrated the potential for constructs encoding Intron-containing self-complementary 'hairpin' RNA (ihpRNA) to efficiently silence genes. ihpRNA constructs were specifically reduced expression and accumulation of rice α -amylase genes by two-dimensional (2-D) polyacrylamide electrophoresis in rice cell suspension culture. This suggests that RNAi should be of great utility for high expression and easy purification of recombinant protein in rice cell suspension culture.

Reference

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