B22

Immune-Responsive Silkworm Cell Lines

Kiyoko Taniai and Shigeo Imanishi
Insect Cell Engineering Laboratory, NIAS, Tsukuba 305-8634, Japan

Numerous cell lines have been successfully established from various lepidopteran species. However, the use of these cells has been limited, such as for recombinant-protein production using baculoviruses. Although the cells resemble dedifferentiated carcinoma-like cells, some cells may maintain distinctive characteristics that correspond to particular tissues. Exploring such cell lines should prove useful for determining the functions of newly identified insect-specific genes in post-genome research.

Rapid activation of several antibacterial protein genes is a tissue-specific immune response that is essential for insect survival. To identify immune-responsive silkworm cell lines, we attempted to transfect cells with a reporter plasmid containing the 235-bp promoter region of the antibacterial cecropin B gene (pCecB) from the silkworm, *Bombyx mori*, connected to a reporter firefly-luciferase gene. Eleven of 15 cell lines tested were successfully transfected with the plasmid, using CELLFECTIN (Gibco BRL), Tfx10 (Promega), or DAC-30 (Nippon Gene). Increased pCecB activity was observed in all 11 cell lines after adding lipopolysaccharide (LPS) to the culture medium; activity was increased 1.5 to 30 fold. We selected two cell lines with high activation, and tested the activation of antibacterial protein promoters from the attacin and lebocin genes. Similar activation with a dose-dependent response to LPS was found. These results suggest that several silkworm cell lines are useful tools for analyzing immune-related genes.