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Plant expression platforms for vaccine production

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Plant made biologics have elicited much attention over recent years for their potential in assisting those in developing countries who have poor access to modern medicine. Additional applications such as the stockpiling of vaccines against pandemic infectious diseases or potential biological warfare agents are also under investigation. Plant virus expression vectors represent a technology that enables high levels of pharmaceutical proteins to be produced in a very short period of time. Recent advances in research and development have brought about the generation of superior virus expression systems which can be readily delivered to the host plant in a manner that is both efficient and cost effective. The following presentation describes recent innovations in plant virus expression systems and their uses for producing biologics from plants.

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Construction of recombinant protein of influenza A virus neuraminidase gene expressed in baculovirus

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Two structural antigens, haemagglutinin (HA) and neuraminidase (NA) are attractive candidates for the development of a genetically engineered vaccine against influenza. Recombinant vaccines are produced by a simple and effective method, although expected to induce an immune response to a specific antigen, remain to be further improved for their high effectiveness. On the other hand, a potent and effective vaccine against influenza should be able to induce both humoral and cellular immune responses. In the present study, the NA gene, which is more stable than the HA one was amplified by Polymerase Chain Reaction (PCR) and then cloned into a eukaryotic expression vector pFastBac HTA. The purity of the expressed NA protein was analyzed on SDS-PAGE electrophoresis. Western blot was carried out to examine the expression of NA using the commercial anti-NA polyclonal antibody. Additionally, an immunofluorescence assay was used to qualitatively assess the antigenicity and biological activity profiles of the recombinant protein, NA, on infected Sf9 cell surface by using immunized rabbit antiserum.

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