Novel and Effective Method of Developing Recombinant Proteins

Tech ID: 24401 / UC Case 2013-281-0

ABSTRACT

Researchers at the University of California, Davis have developed a novel method to produce and recover high limits of recombinant protein from leaf tissue.

FULL DESCRIPTION

Bacterial systems are currently the gold standards for the development of recombinant protein, however, bacterial systems are unable to perform glycosylation and post-translational modifications of proteins, which are often crucial to the functioning of human proteins used as therapeutic agents. In addition, recombinant proteins expressed in Bacterial systems may suffer from inclusion body formation which complicates downstream processing and product recovery, and have the potential for endotoxin contamination.

Unlike Bacteria, Yeast systems, which have also been used to develop recombinant proteins, can be used for complex glycosylations, but often lead to "hyperglycolsylated" recombinant proteins. While mammalian systems provide the most realistic environment for a therapeutic this typically involve cells that are very difficult and costly to culture.

Plant systems are beginning to gain favor as systems to express systems as they have a number of potential advantages over conventional production systems. Plant systems are inexpensive to produce, can generate vast amounts of biomass at very low costs, and are not known to harbor human pathogens. It is also possible to store recombinant proteins in specialized organs like seeds and tubers, a feature which could simplifying storage and transport of raw material. Unfortunately, some impediments to storage of recombinant proteins in plant systems are high protein degradation over time, which can lead to low purity of recombinant protein of interest.

Researchers at the University of California have developed an efficient method for the production and recovery of recombinant proteins within plant tissue. Through this novel method, researchers can both increase recombinant protein yield and also maximize the isolation of recombinant protein from leaf tissue with fewer contaminating proteins. This method has also allowed for earlier isolation of a protein of interest.This method requires very little to no advanced equipment compared to other expression systems, reducing the cost associated with developing recombinant protein.

APPLICATIONS

- Recombinant Proteins

FEATURES/BENEFITS

- Low cost
- More effective
- Increased production
- Higher yield
- Greater purity

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,617,297	04/11/2017	2013-281

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Cucumber Mosaic Virus Inducible Viral Amplicon (CMViva) Expression System
- In plantae production of heterologous proteins using viral amplicons

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OTHER INFORMATION

KEYWORDS

Recombinant proteins

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Processing and Packaging
  - Transgenics
- **Biotechnology**
  - Health
- **Medical**
  - Delivery Systems
  - Research Tools

RELATED CASES

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