



Antigen and Antibody Expression Constructs for Serodiagnosis of Plant Viruses

The present technology offers up-scaling and renewable generation of antigen production which is require for polyclonal antibody generation. The traditional technology is cumbersome and time consuming.

Technology Description

§ The technology involves serological (protein based) diagnosis of plant viruses. The traditional methodology has a limitation to produce ELISA based plant virus diagnostic kit as antigen preparation is difficult on renewable basis. The following innovations were made for generating antigen/antibody in E. coli which has prospect for up-scaling and commercial utilization.

§ Antigen constructs preparation using full and core conserved region of capsid protein gene sequence that over produced adequate antigen required for polyclonal antibody production.

Engineered monoclonal antibody expression constructs

Name Of institute:
Indian Agriculture Research Institute, New Delhi
Patent status: Filed

Scientific Experts:
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Background

For the diagnosis of plant viruses, antibodies are traditionally generated by immunizing animal with the purified virus. Bacterial (Escherichia coli) expression of protein is simple, fast and inexpensive for generating high amount of purified proteins with minimal post translational modifications. The present technology offer generation of engineered antigen and antibody in E. coli.

Benefits / Utility

Diagnostic kits provide opportunity to detect the causal virus, produce virus free planting materials, certifying freedom from virus in quarantine plant materials, breeding resistant cultivars, for assessing susceptibility of germplasm and management decision in application of crop protection measures.

It helps in timely management of virus infection, increasing crop productivity, improving farmer's economical condition and reducing

Country

In India, plant virus diagnostic reagents and kits are imported and sold. Indigenous serodiagnostic reagents and kits are hardly available.

Scalability

The constructs can be used conveniently for up-scale production of antigen/antibodies

Business and Commercial Potential

Plant viruses are important constraints in tropical countries including India. A few serodiagnostic companies provide reagents/kits for plant virus diagnosis all over the world. Production indigenous reagents and kits for serodiagnosis of plant viruses will be cheaper and therefore they are commercially highly potential.

Potential investors to this technical innovation

§ Immunodiagnostic companies § Biotech companies



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Financials

§ Biotech company set-up can conveniently take up production of the reagents § Immunisation of one rabbit with ~ 3 mg of expressed antigen in E. coli will generate ~20 ml of antiserum. § 0.1-0.2 ml of imported antiserum is sold currently in India at the rate of Rs. 15,000-20,000 for testing 1000 samples § Kits are sold at Rs. 40,000- 50,000 for 1000 samples Saleable product lines: (a) Different versions of diagnostic kits such as ELISA, DIBA and Western blot assay kits can be prepared by these antigen and antibodies. (b) In addition, individual antigen, antibody (c) Conjugate and (d) Positive and negative controls

Target Market / Customer

§ Seed companies § Referral labs § Agricultural extension centers Scientists § Immunodiagnostic companies § Biotech companies

Limiting factors for large scale commercialization

International companies are available

Social impact of the technology

§ Timely management of virus infection § Productivity of the crops will increase § Improvement in the economical condition of farmers § Will reduce pesticide application in the environment

Any other relevant information

For preparation of reagents and assay kits technical support can be

