



TRANSGENIC SUGARCANE MODEL FOR PRODUCTION OF HIGH VALUE BIOMOLECULES

TECHNOLOGY AVAILABLE FOR TRANSFER

TECHNOLOGY

The technology offers a transgenic sugarcane model for production high value protein molecules eg: pharmaceutical proteins like vaccines, therapeutic proteins, oral vaccines, or any other intermediate proteins of industrial value.

The transgenic sugarcane model has been developed at Sugarcane Breeding Institute, Coimbatore, India

STATE OF DEVELOPMENT

The transgenic sugarcane model has been successfully used for the production of Beta-glucuronidase (gus) protein. The yield of partially purified GUS protein is 1mg/ml of juice. The estimated purity is 70%.

BUSINESS OPPORTUNITY

BCIL is looking for industrial partners keen to license the transgenic sugarcane model or validate the transgenic model for production of high value protein through option agreement.

COMPETITIVE ADVANTAGES

The transgenic sugarcane model was used for production of Beta-glucuronidase (gus) as a model protein.

The transgenic sugarcane model offers the following advantages:

- The yield and activity of the recombinant protein is high
- The recombinant protein is targeted and stored in vacuole. In a mature cane 80-85% of the cells are filled with vacuole. One kilogram of stalk can give 600-650 ml of juice.
- Sugarcane juice has relatively negligible amount of protein (around 0.04%), hence it would be simpler to purify the heterologous proteins expressed in juice.
- Large storage vacuole makes it possible to store even proteins that are phyto-toxic and thus isolating it from other metabolic pathways.
- Sugarcane being vegetatively propagated, biosafety issues with transgenic sugarcane are low.
- Specific morphologically distinct varieties for different proteins are possible.
- As raw sugarcane juice is palatable direct delivery of vaccines or nutraceuticals is possible.

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