

PLANT-BASED VACCINES: FRONTIER BIOTECHNOLOGY AND WORLD HEALTH



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OBJECTIVES

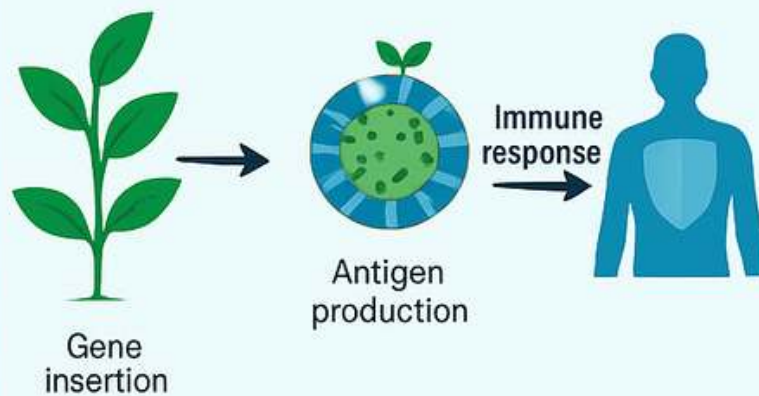
Use genetically modified plants to produce vaccines

Enable crops to generate immunity-boosting proteins.

protect humans and animals from multiple diseases.

METHODS

How Plant-Based Vaccines Work



- Plant-based vaccines use genetically modified crops.
- Agrobacterium-mediated transformation or viral vector-based transient expression is commonly used to deliver antigen genes into plant tissue.

ANALYTICAL AND QUALITY

ANALYTICAL & FUTURE

- CRISPR and synthetic biology
- Lyophilization
- Expression optimization
- TEM image analysis

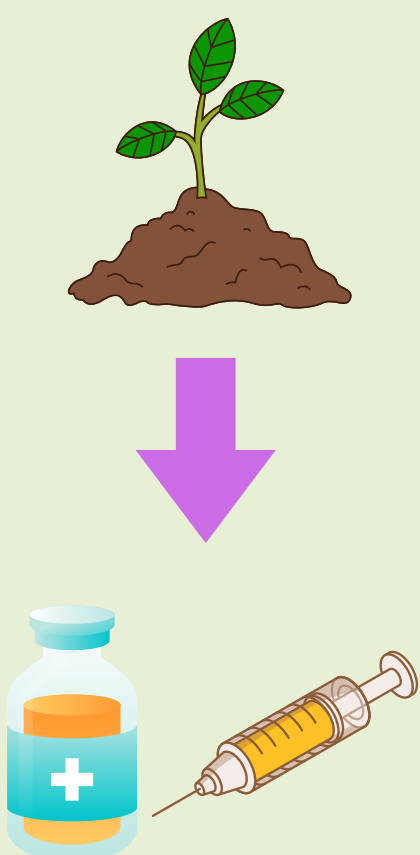


EVIDENCE

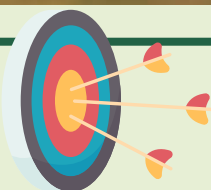


Medicago's
COVID 19
vaccine (CoVLP)

- Produced using *Nicotiana benthamiana*
Approved in Canada
ZMapp:
- A tobacco-derived monoclonal antibody cocktail used against the Ebola virus



CHALLENGES AND FUTURE PROSPECTS



- Inconsistent yields
- Differences in glycosylation patterns

REFERENCES



1. Mason HS, et al. (1992). Proc Natl Acad Sci USA, 89(24):11745-11749.
2. Ward BJ, et al. (2021). Nat Med, 27(6):1071-1078.