

Glycosylation modification for immunotherapeutic monoclonal antibody in plant molecular biofarming system

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Advances in molecular biology, immunology, and plant biotechnology have changed the paradigm of plant as a food source to so called 'plant bioreactor' to produce valuable recombinant proteins, such as therapeutic or diagnostic monoclonal antibodies, vaccines, and other biopharmaceutical proteins. The effective plant production system for recombinant antibodies requires the appropriate plant expression machinery with optimal combination of transgene expression regulatory elements, control of post-translational protein processing, and efficient purification methods for product recovery. Plant production systems for therapeutic antibodies are very attractive to pharmaceutical companies producing antibodies in demand. Currently, we have successfully developed plant system for production of anti-rabies monoclonal antibody and anti-colorectal cancer monoclonal antibody. However, there are several limitations that we have to resolve to achieve the completed efficient plant system. Particularly, in posttranslational modifications, glycosylation has been shown to influence the properties of plant-derived monoclonal antibodies. Here, we discuss about the approaches and perspective in plant systems to produce monoclonal antibody with glycosylation modifications.