

Agrobacterium tumefaciens mediated transformation of the aquatic carnivorous plant *Utricularia gibba*

CURRENT STATUS: UNDER REVISION

 Plant Methods  BMC

Araceli Oropeza-Aburto


Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

Sergio Alan Cervantes-Perez

Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

Luis Rafael Herrera-Estrella

Cinvestav

 lherrerae@cinvestav.mx *Corresponding Author*

ORCID: <https://orcid.org/0000-0001-7936-3856>

DOI:

10.21203/rs.2.20139/v1

SUBJECT AREAS

Plant Physiology and Morphology

KEYWORDS

Agrobacterium tumefaciens, genetic transformation, carnivorous plant

Abstract

Background *Utricularia* genus belongs to Lentibulariaceae family and has the highest number of species including terrestrials, epiphytes and aquatic plants. The development of specialized structures that evolved for carnivory is a feature of this genus that has been of great interest to biologist since the early studies of Darwin. *Utricularia gibba* is an aquatic carnivorous plant with sophisticated bladders traps that have one of the most complex suction mechanisms for trapping a prey. However, the molecular characterization of trap developmental and the biophysical processes involved in prey trapping are still largely unknown due to the lack of simple and reproducible gene transfer system for carnivorous plants.

Results Here, we report the establishment of a simple, fast and effective protocol for the genetic transformation of *U. gibba* based on the T-DNA of *Agrobacterium tumefaciens*. An in vitro selection system using Phosphinotricin as selective agent was established for *U. gibba*. We report the tissue specific expression of the 35S promoter and the promoter of a trap specific ribonuclease gene. Plant transformation was confirmed by PCR and Real Time PCR in *U. gibba* plants.

Conclusions We conclude that the genetic transformation protocol we developed is an effective method to study developmental biology and functional genomics of carnivory and propose *U. gibba* as model to study the developmental processes involved in trap formation.

Full-text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed.

However, the manuscript can be downloaded and accessed as a PDF.