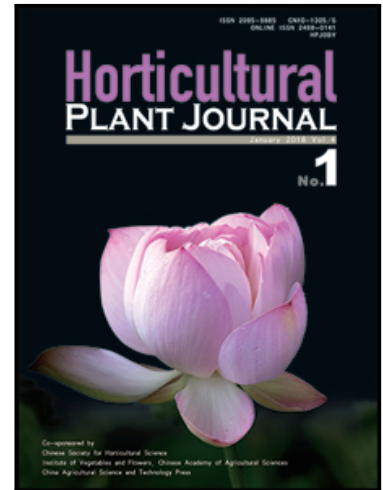


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Research Progress on *Agrobacterium tumefaciens*-based Transgenic Technology in *Brassica rapa*

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Abstract

Brassica rapa L. is cultivated globally and consumed in many areas worldwide. Using the transgenic *Agrobacterium*-mediated transformation method, which is a reproducible and efficient technique, genes can be transferred into various *B. rapa* species. This review summarizes the processes involved in *Agrobacterium*-mediated transformation of *B. rapa*, including surface seed sterilization, co-cultivation with *A. tumefaciens*, induction of callus/shoot/root formation, and confirmation of transgenic plants. In addition, factors such as the *Agrobacterium* strain, plant genotype, explant age, transformation efficiency of the hybrid or inbred line, and the concentrations of N6-benzyl amino purine and naphthalene acetic acid, are discussed. And this review shows clearly how to do it, what to do, and what not to do in the transgenic *Agrobacterium*-mediated in *Brassica rapa*. The information presented here lays the foundation for a simple and efficient method that resolves existing problems and improves overall transgenic *B. rapa* production, thereby benefiting both basic and applied research.

Keywords: *Brassica rapa*; *Agrobacterium tumefaciens*; transgenic; transformation

1. Introduction

Although distant hybridization has been used to introduce some excellent characteristics into *Brassica* crops, this process is very time-consuming and laborious. Nevertheless, genes such as those responsible for *turnip mosaic virus* (TuMV), clubroot and downy mildew resistance as well as purple coloration may be incorporated into high-quality inbred lines by breeders using transgenic technology. An effective transformation system would also be an

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