

B-139 Agrobacterium-mediated gene transfer into Indica-Javanica rice breeding lines

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Agrobacterium-mediated gene transfer offers more advantages than other DNA delivery methods. The objective of this study was to evaluate the application of Agrobacterium-mediated gene transfer method for Indica-Javanica rice breeding lines (IR 65597-134-2 and IR 65598-112-2).

Experiments were carried out, (a) to assess the response of several tissues (mature seed scutellum [MSS]-derived callus, stem base [SB] explants and SB-derived callus) to Agrobacterium-mediated gene transfer using two *A. tumefaciens* strains (LBA4404 [pVDH65, pTOK47] and LBA4404 [pTOK233]); (b) to optimize the efficiency of T-DNA transfer into rice by altering culture conditions and, (c) to regenerate plants from inoculated tissues. The transient *gus* gene expression in inoculated tissues was used as an indication of potential T-DNA transfer.

The results showed that only MSS-calli of both breeding lines were amenable to *gus* gene expression. The presence of acetosyringone, a phenolic compound in the co-cultivation medium was found to be crucial for T-DNA transfer. The efficiency of T-DNA transfer was further enhanced by a shortened preculture period and prolonged co-cultivation period of explants. None of the inoculated tissues survived when transferred to selection medium containing the antibiotic hygromycin. This was mainly due to the low intensity of foreign gene transfer as indicated by poor transient *GUS* expression. Therefore, regeneration of transformants was not achieved.

The results demonstrated, for the first time, that the Agrobacterium mediated gene transfer into above rice breeding lines is possible.

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