Effect of Cold Pretreatment and Period of Preconditioning Inoculation on Transformation Frequency in Rapeseed (*Brassica napus* L.)

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Genetic engineering in rapeseed will lead to the generation of plant varieties possessing more agriculturally and economically viable genetic traits. The most gene transformations to rapeseed have been done through *Agrobacterium tumeifaciens* method. *Agrobacterium* mediated transformation is depend on many parameters that must be optimized. The purpose of this study was to determine the effect of cold pretreatment (control and 12 h) among a 5 day old-plantlets with preconditioning period (0, 24 and 48 h) and inoculation period of explants in *Agrobacterium* solutions (2, 10, 20 and 40 s) on the *gus* reporter gene transformation frequency in Rapeseed. The experimental design was factorial on basis of completely randomized design (CRD) with four replications. The gene was transferred to a commercial cultivar rapeseed (PF-7045-91) via *A. tumeifaciens* (LBA4404 strain) mediated transformation method. Moreover, using PCR technique and *gus* assay, the presence and expression of genes in plants were confirmed. Statistical analysis revealed that there was no significant. Results also demonstrated that there was a significant difference among preconditioning and inoculation period levels for transformation efficiency. The highest effect on transformation efficiency was observed through 24 and 48 h preconditioning periods (with same effects and means 24.21 and 23.55%) and 10, 20 and 40 s inoculation periods (with same effects and means 20.50, 20.63 and 20.54%) respectively.

Keywords: Rape, Cold pretreatment, Agrobacterium tumeifaciens, Explants preconditioning

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