



Assessment of various factors for high efficiency transformation of Egyptian rice involving DREP2A gene

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Abstract: This study was conducted to provide a well-adopted technique for regeneration and transformation of Egyptian rice cultivars as a first step in improving their heat tolerance. Among different sugar types, maltose (at 4% concentration) was found to provide the highest percentage of callus induction. 9g/l agar was found to be the most beneficial concentration for solidifying the medium. Two mg/l kinetin plus 0.2mg/l NAA were chosen as the best concentration for shoot regeneration. Since Sakha104 cultivar showed the highest regeneration capacity among the two tested cultivars, it was selected for transformation experiments. Two to three week-old scutellum calli were co-cultivated with *Agrobacterium tumefaciens* harboring DREB2A gene driven by the CAMV35S promoter, hygromycin resistance gene and GUS gene. OD₆₀₀=0.8 proved to be the best concentration of *Agrobacterium* for Egyptian rice. Optimum co-cultivation period was 3 days. 25 °C was found to be the best temperature for co-cultivation. Polymerase chain reaction and GUS assay confirmed the presence of the transgenes.

Key words: *Oryza sativa* L., Regeneration, *Agrobacterium*, Transformation, DREP2A.

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